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Knossos at Burlington House.

THERE is surely no attribute of time or of art more remarkable than the relation of art to time. And surely there is no aspect of the history of mankind more full of ironical vicissitude than the record of man's progression in the power of making beautiful things. The periods of development and decline, the states of climax and collapse, of imitation (conscious or unconscious), of transference, of creation, or of oblivion are so strange, so unaccountable, and so baffling to the inquirer that it would seem at times almost impossible to bring that aspect of anthropology which deals with the creative power of human brains up to scientific or even philosophic rank. We can but collect facts and stand aghast at their disorder, knowing that at any moment the spade of the excavator and the wit of the explorer may bring to light fresh facts to make chaos more chaotic. That our own age, in spite of human development, lies behind the Middle Ages and the Renaissance in point of art we accept with cheerful resignation as a preposterous necessity; but history bears greater marvels of inverted progress than this. We have been wont to receive from Ruskin and from others assurances of the excellence of the early Florentines, but even as children, though we took these assurances on trust, and readily believed that art was an essence that lay outside such considerations as mere similitude, we marvelled in our silent way that the Italian painters of the fourteenth century were so much less capable in the matter of delineating form than the Greek sculptors of eighteen centuries before. If folk could compass the representation of human shape four or five hundred years before Christ, why, we asked, were excuses to be offered for the incomplete achievements of an age that had enjoyed so much more than a millennium of increased experience?

Then, when we were acclimatised to our astonishment at the abilities of long-ago Greece, we became aware of an apparently illimitable stretch of Egyptian skill lying behind historic Europe in ages so remote that the occasional addition of centuries to the tale of wonder could hardly increase the amazement. Of Egypt we feel we can believe anything, and so we can of China and the East. We are like the audience of a conjurer—having once witnessed the possibility of the impossible, we are ready to go all lengths in credence of the incredible. Thus Knossos, the last turn of the magician's spade, finds us, indeed, not new to the miracles of time, but so far from jaded that we are veritably stirred by the accumulated stress of past wonders to an increased appetite for like marvels.

Time was when the age of myth lay in ordered precedence behind the dawn of legitimate history, when we looked back on a nebulous epoch in which the existence of the gods of Greece and Rome was as difficult of disproof as of proof; but of recent years that exploring power which has dug about the roots of Biblical history and has left that history marvellously undisturbed—indeed, confirmed and established, has plunged into the centuries of classic myth, and is daily busy making facts out of things distant and strange which we had thought to be the visions of poets, the imaginings of historians, or the accretions of too expansive tradition.

Tiryns and Mycenæ have had their exposure. To-day it is the turn of Crete, the land of Minos and Minotaur, of Dædalus, and of the love of Ariadne for Theseus.

The collection of drawings, casts, and photographs now on view in a gallery at Burlington House are the visible results of that diligent exploration of the soil of Crete which has been conducted since 1899, the year in which the island was emancipated from Turkish rule. Mr. Arthur Evans has been the controller and director of the work, backed by a committee of which Prince George of Greece is the patron, and assisted by Dr. Duncan Mackenzie and Mr. Theodore Fyfe—the latter in an architectural capacity. Mr. Carr Bosanquet, Director of the British School at Athens, has also been actively, as well as officially, associated with the Cretan discoveries, and his predecessor, Mr. Hogarth, is personally responsible for most of the art treasures which were found in spots other than Knossos, notably at the seaport Zakro and in the Dictæan cave.

Those who were present on December 15, 1902, when Mr. Evans delivered a paper on the Knossian Excavations before the Royal Institute of British Architects will have heard the description of most of the subjects now exhibited, and the Journal of the Institute (Vol. x., No. 4) will be found to contain a plan and other illustrations which are helpful to the right enjoyment of this very remarkable exposition of prehistoric art.

The Cretans, perhaps, were always liars, but they were not always the enemies of truth. There came a time when they made a stand against the telling, by other people, of the unholy story of the Minotaur,* and insisted on the reconstruction of this myth in terms of historical probability. Reason could be easily assigned for so proper an expurgation of national history, but it was not so easy to understand why, with the unclean monster, the Cretans swept away his labyrinth,† stating that the so-called labyrinth was no maze, but merely an ordinary castle dungeon.‡ To-day there seems to be at hand an explanation not merely of the legend of the labyrinth, but of its refutation. The plan which the excavations of Mr. Evans have made it possible to prepare exhibits a building which, though not professedly a maze, presents in the intricacy of its corridors and chambers so complicated a series of passable and impassable compartments that a stranger wandering in its recesses might well need the help of some Ariadne's clue.

This plan, which hangs on the left of the door in the room set apart for the Knossian collection, should claim first attention. For all its seeming intricacy, it is in reality a

* Yet the impressions from seals in this collection are evidence that monstrous and hybrid beings were dear to the Cretan imagination.

† The word labyrinth is connected by modern etymologists with the Labrys, or sacred two-headed axe, which recurs so frequently among these remains.

‡ Plutarch. Life of Theseus.

marvel of straightforward and almost modern directness, and reveals in a marked degree the evidences of deliberate design. The key to the understanding of it lies in the fact—of itself a very remarkable fact—that the buildings set forth upon it are, to a great extent, basement apartments; that, with certain significant exceptions, the main rooms of the palace were on an upper floor.

The features immediately intelligible are two great courts, wholly or partly surrounded by buildings. The central court, measuring some 200 ft. by 90, appears to have its principal approach from the north, on which side are traces of the convergence of two ancient roads, one coming from the prehistoric city, the other from the sea. The western court is entered through a portico, connected on the south with a corridor known to the explorers as the "corridor of the procession," by reason of a remarkable series of processional frescoes found therein. The existence of a vast propylæum, apparently leading only to the comparatively small "court of the altar," is accounted for by the reasonable supposition that at this point there was a magnificent approach, either by steps or slope, to a huge upper megaron or hall, covering all or part of the confused mass of chambers which lie between the western and central courts. That a similar hall lay on the east side of the central court is also considered by Mr. Evans to be probable,* and, indeed, we find on that side the well-preserved remains of a staircase, so entirely modern in its arrangement of flight over flight, that we wonder increasingly at the apparent neglect by succeeding ages of a device at once so effectual and so architectural. No discoveries in Greece, Rome, or Pompeii exhibit anything of the kind.

But the basement buildings are not to be overlooked on account of the supposed glories of the upper halls. The very store rooms have their tribute of beauty; the large hoard of jars and amphoræ, many of which are well illustrated in this collection, are in themselves attractive in both form and ornamentation. The South Propylæum, apart from its intrinsic interest, was the scene of the discovery of the very fine coloured fresco of a cupbearer which Mr. Evans describes as "the finest example of figure painting that has survived from prehistoric Greece." The olive press, another point of interest, was found wonderfully complete, with its adjacent magazines and well-arranged conduits; and the workshop of the palace sculptor offered traces of that sculptor's art; but perhaps the centre of architectural interest among the chambers of this lower stage is to be found in the elegant little throne-room situate on the west side of the central court, from which it was separated by a vestibule or anteroom. The throne-room itself is divided into two portions, one of which is at a lower level, and is lighted from above by a sort of unglazed skylight, or compluvium. A man standing in this lower part † would be separated from the personages on the upper floor by a kind of barrier, but there was access at the side by means of a short flight of steps. Two architectural features in this room are of special interest—the throne itself and the columns which support the roof. The throne, a cast of which stands facing the door, is like nothing else in known art save that the panelling below the seat bears a faint resemblance to a cusped Gothic arch. It is scarcely beautiful, and suggests in the naïveté of its archaism the possibility of its being even earlier than its ancient surroundings. As to the columns, it should be observed that the originals have perished, but from the shape of the sockets (in the stone bench) from which they spring, and from the evidences of a little architectural wall-painting discovered in this very palace, Mr. Evans felt justified in directing Mr. Fyfe to effect a restoration in the manner which has become known as the Mycenæan order. Mr. Fyfe has exercised a pardonable liberty with the capitals, which he has made to approximate in general effect to those of the Greek Doric, a welcome improvement on the Mycenæan detail, which, truth to tell, is frankly ugly. He has retained the inverted tapering of the shaft, which expands upwards instead of downwards; and this in itself is a sufficient deformity. The new columns of the restoration are apparently of wood, as were the remains of the old ones. Around the upper throne-dais were ranged gypsum benches, and when the explorers first opened the ground the walls were bright with the colours of a weird griffin fresco.

The throne-room is well illustrated in the photographs and drawings of this collection, so is the really marvellous "quadruple" staircase; indeed, the greatest care has been taken to set before us, by the use of general views as well as orthographic drawings, the actual state of the present stage of excavation. One small regret may perhaps be expressed—the regret that in the admirable photographs scarcely any human figures are introduced to give an indication of scale. A man on the staircase, for example, would have enabled us to see at a glance whether the very unusual proportion of rise to tread in the steps is due to the tread being much broader than the normal size or the riser much shallower, or both. How general must have been the use of steps in those far-off days is shown by the strange little porcelain mosaics which represent the façades of houses; these diminutive elevations are, no doubt, somewhat conventionalised (as we conventionalise the front of a doll's house), but they have some attempt at verisimilitude, and all represent houses of more than one story.

But the modernisms of Knossos are not exhausted by the mention of nineteenth-century staircases and thirteenth-century Gothic thrones, nor even by an allusion to the very elaborate and scientific system of drainage and sanitation.

We sometimes reproach our womankind by appealing to the broad-waisted beauty of the Venus of Milo, and suggest that the progress of body-culture has been a continuous deterioration since Eve, but Knossos comes to the rescue of modern woman and her argument. It is true that the female toreadors represented in the great bull-fight fresco may not be typical of good Cretan society, but their tight waists are certainly shared by all the other women depicted in this collection, whose costume seems generally to include a skirt of very modern cut and a waist-belt of minute circumference.

It is no doubt difficult even for those who are most expert in such matters to be certain of the dates of all the specimens of ornament and decoration which these excavations have brought to light, and it would obviously be wrong to assume that all the examples of fresco, gesso, mosaic, and pottery-painting here exhibited belong even approximately to the same date; but with every allowance for the probability that time, rather than other causes, is responsible for those differences of style which divide the specimens from one another, it is impossible not to realise that we are face to face in these very variations with yet another evidence of the modern spirit of these ancients. We were wont, in comparing the present with past ages, to observe that former epochs were consistent in their methods, true each to his own school of creation, hedged in if not by a firm barrier of time at least by a law of slow progress which was strong enough to prevent arbitrary divagations or an abrupt advance or relapse; and then we were bidden to note in despair how that our age alone, overfed with knowledge of the past, unstable and eclectic, is unwilling or unable to be persistent and uniform, to be at once simple, sincere, and true to a type. We thought that our modern age alone wavered uncertain between the natural and the conventional, that we alone could tolerate the juxtaposition of archaism, realism, and revival. But no; Knossos at least was our equal in versatility, and for all our trains and telegraphs Crete would appear to have rivalled modern England in knowledge of the doings of her neighbours and her predecessors. There was truth in the cry of Dædalus,* when he took to the making of wings, that Minos ruled both land and sea, so that the air was the only free way out of his kingdom. Minos must have commanded not only the maritime world, but with it the most powerful vehicles of commercial and artistic intercourse. Crete, in fact, must have been a Britain, a little island of large intercourse, a little heart of a great world. Glance at the bull fight fresco, at the torso in coloured relief, at the lion-head goblet, at the lily and myrtle fresco, at the frame of painted vases, and the truth of this, the significance of it will appear. Consider what we know of other ancient periods of artistic activity, and undoubtedly the contrast is marvellous. Look at Nineveh with its uniformity of style in grandeur, look at the academic integrity, the sameness of Greek variety, look at the marked and steadily maintained mannerisms of Egypt, and then let us turn to Knossos, ancient Knossos, which lies almost as far before the first century as we lie after it, and what do we find? A versatility, an exhibition of plurality in method which must surely be the attribute of an artistic race already old enough and learned enough to be consciously uncertain. How can we account for the existence side by side of the archaic simplicity of the bull-fight fresco and the finished restraint of the cupbearer? Or take another example, in the two representations of the lily exhibited on the same wall. The lily is of all flowers the one of which the conventional treatment lies nearest to the realistic, yet here we see the flower depicted at the hands of these ancient

* But it should be observed that the upper hall on the east side would be on the same level as the court (owing to the fall of the ground), and consequently a story below the western upper hall.

† The lower portion of the room is described by the discoverers as a tank, or bath, but the reason for the existence of a bath in what appears to be an audience chamber is not clear. Could it have been a kind of dock in which a prisoner would face a judge?

* Ovid, "Metam." VIII., 187.

artists in two degrees of modified imitation, so far removed one from the other that there lies between them at least a fair swing of that artistic indecision which implies, as a rule, not the fumblings of a groper in darkness, but the revels of a giant in the blaze of day. In a word, it is the embarrassment of riches. Time (that is, difference of epoch) may, we admit, be accountable for some of these differences of execution; but, even so, it would seem that there were men of ancient Crete who could appreciate the existence side by side of things so various, whether contemporary or not.

And there is no lack of style in these works. Style, indeed, is wanting, in the sense of uniformity; but of style, as implying distinction, refinement, and the studious avoidance of the commonplace, there is universal evidence. A bit of drawing here and there may be childish, but even the crudest of the human figures here displayed is part of a decorative whole which one cannot despise. We have already mentioned the beauty of the cup-bearer subject beside it, for mastery of form, must be placed the truly amazing torso in coloured gesso, the bull's head, which, like the torso, is an example of tinted sculpture, and some marvellous leaping figures in carved ivory, so perfect in the refinement of anatomy as to form a complete contrast in sculpture with the equally perfect but rigidly conventional lion head drinking-cup. These things alone, had no others come to light, would have been enough to prove to the modern world the ancient ability of Crete.

In a sea-girt land mistress of a naval supremacy one would perhaps expect to find an art tinged with marine suggestions and marine motive. Nor is this absent, several varieties of fish-scale ornament, and a vigorous set of dolphins (which seem prototypes of the Aldine colophon), are evidence that subjects were sought from the sea as well as from the land; but perhaps a deeper and more significant sign of sea-influence is to be sought in that constant use of wave forms and of shell-derived spirals which is, as we know, a characteristic of all Mycenaean art. Indeed, the fragments and restorations of spiral designs richly coloured and intended no doubt as ceiling decoration are among the more conspicuous, though not altogether the most beautiful things in this collection.

Who shall say that the explorer in laying bare the home of Minos, or in digging out the very birthplace of Zeus, is destroying the romance of mythology?* He has shown us that the beauty of life in those days, its power, its refinement, were greater than we had ever dreamt; that the age of Theseus and Ariadne was an age very like our own; that Minos was a greater man than we knew—perhaps more rather than less likely to be the son of Zeus! And as for Dædalus, may it not be that he has achieved increase of fame, being found to be not only sculptor and inventor, but (greatest of all) architect?

CHURCH RESTORATION, IPSWICH.—The Church of St. Lawrence, Ipswich, has just been reopened after restoration. The architect was Mr. Frank Brown, and the builder Mr. Charles Borrett.

* The explorers appear to apply the term Minôan to the latest buildings on the site (*circ.* 1800 B.C.), thereby implying that the earlier remains of which there are traces (put conjecturally at 2800 B.C.) precede the existence of the king who was son of Zeus and brother of Radamanthus. This brings the father of the Gods into strangely close touch with known humanity

THE ARTS AND CRAFTS EXHIBITION.—II.

IN our first notice of the Arts and Crafts Exhibition we confined ourselves mainly to the class of exhibits there which have the closest relation with architecture, in regard to principles of design and structure, viz., those which came under the general appellation of "furniture." For in fact furniture may be almost said to be architecture in a movable or portable form. Like architecture, its design has to express construction; in most examples it has its base and its crowning finish, treated on much the same principles as the basement and the cornice or other termination in architecture; it must stand firm on its base; it must be suitable to its practical purpose; and even many of the characteristic forms of ornament in architecture are applicable, and are applied, to furniture. As J. D. Sedding said in a paper read at a former Arts and Crafts exhibition, architects feel very much at home there.

We have now to look at some of the exhibits which are less directly architectural, touching occasionally on two or three exhibits of the furniture class which were passed over before owing to their not being grouped with most of the others.

All these objects exhibited at the New Gallery are supposed to be in a rather special sense artistic work; they are to illustrate the artistic spirit as applied to articles for the most part of practical use; or at all events to manufactured articles which can be made from designs furnished, as distinct from such art work as painting and sculpture, which is the personal work of the artist and which is not for practical uses. The line is in some cases difficult to draw; there are in fact things in the New Gallery which might as well be in an art exhibition; pure and simple; such as Miss Rope's two charming sculpture panels and Mr. Gillick's frieze, in the West Gallery. But in regard to those which really represent crafts—what is it which really gives these articles a claim to artistic quality? In regard to not a few objects in the exhibition it would appear that artistic quality is supposed to reside in designing a thing in a different way from what is usual; in making it in an unexpected form or using an unexpected material — especially if it is a rougher and coarser material than is generally employed. This kind of unexpectedness does not in itself constitute artistic character, which is shown in the combined qualities of beauty and fitness, not in eccentricity; and as we have already implied (and we see the same criticism elsewhere) the eccentric element is far too prevalent in the exhibition. It must in fairness be remembered, however, that as long as the result is not either ugly or unfitting, there is something in novelty of treatment; an object put together and treated on lines different from what we are generally accustomed to in that class of object represents an endeavour on the part of the maker to think for himself, and not to copy accepted forms, and is so far interesting; and the introduction of an unusual and even coarse material may be justified as an experiment: "This stuff is generally considered too common for such and such a purpose; but let us see whether something cannot be made of it." That is a legitimate endeavour, and one for which the Arts and Crafts exhibition affords a natural opportunity, seeing that the so-called "Academy of Arts" turns its back on such matters.

In the class of textiles the four panels exhibited by Mrs. Traquhair in the West Gallery, illustrating the story of Orpheus and his search after Eurydice (at least that is what we take it to be, but the treatment in the fourth panel especially is somewhat obscure), are quite the most remarkable examples. These are in fact decorative pictures in tapestry, and might have been executed as paintings, but they were worth doing in tapestry, to show the special texture and quality of the material. As colour they are very fine, and show a keen sense of the effect of tapestry colour when viewed from a certain distance; the colour adopted for the nude portions of the figures, for instance, is, at a distance and when the work is viewed as a whole, quite sufficiently near flesh-tint for a decorative picture, though on a close inspection it has no such appearance. The third of the series is the best as design; in the second the figure is too much like an adaptation from Botticelli, and in the fourth the composition is confused and does not explain itself. But these panels are perhaps, on the whole, the most remarkable works in the exhibition. They are certainly a long way superior to Mr. Walter Crane's "Heraldic Portière," executed by the lady who is called in the catalogue "Mistress Walter Crane" (a foolish piece of affectation only too characteristic), which is weak both in colour and design. Among merely decorative textiles there is some good work, and some that is showy rather than good. In textiles that are to be hung or used folded, not spread out straight, it is important to remember that there is a freedom allowable, and even desirable, which is not allowable in surfaces which are always to be displayed flat. Miss (or Mrs.) Hussey's "Appliqué Linen Quilt," for instance, No. 153 in the West Gallery, is an admirable specimen of design for that kind of object, where the pattern may be as unsymmetrical as you like, because it can never be seen as a symmetrical design; all that is required is that each part as seen should present play of line and colour. The kind of irregular design shown in this would be bad in a wall-paper; it is very good in a quilt—just what is wanted; and while it is described in the catalogue as "unfinished," it may be doubted whether any further finish would improve it. The embroidered coverlet, No. 369, in the North Gallery, is an example of the opposite kind; good work in detail, but far too square and symmetrical for an article in which the design can never be seen as a whole. The nature of the stuff, again, should to some extent rule the character of the design. Thus the printed linens exhibited by Messrs. Baker & Co. in the West Gallery, and designed by Mr. A. F. Vigers, are quite right in their free and rather playful use of floral forms; while the vertical and severe design, with subdued colours, in Mr. E. Hunter's "Portière" (132), is suitable to that more weighty material and would be unsuitable to the lighter printed silk. Some of the textile exhibits in the West Gallery are rather commonplace; but two or three by Miss Una Taylor are fine in design and execution, and her "Study in White Silk Embroidery" (77) is both novel and effective.

Among other things in the West Gallery, before we quit it, we may mention two or three specimens of folding screens, of which that "by Annie Garnett and Assistants," mounted in ebony, is a very pleasing piece of work, with conventional flowers worked in silk on a warm orange-tinted ground. Colour is valuable in a screen, as we see in comparing this simple design with the screen (115*a*) painted in monochrome by Mr. Meteyan with the story of Orpheus and Eurydice; a much higher class of artistic work in one sense, but depressing, as a screen, from the heavy and unbroken brown colour of the paintings. Another screen (84*b*), designed by Mr. R. W. Gibbon, illustrates what we remarked before as to experimenting in coarse materials; this is covered with a rough greenish material, certainly not attractive; but it is relieved by a leaded glass panel in each leaf, and with this addition does well enough as a screen, say, for a study or office; it would be quite out of place in a sitting-room.

The necessary distinction between floral design for textiles and for wall-papers is hardly well illustrated in the exhibition. Wall-papers, from their always flat position and the nature of the material in which they are executed, demand a much more severe conventionalism than textiles; but the set of wall-papers by Messrs. Jeffrey, in the North Gallery, which forms the most important exhibit of this class, does not afford at all a good example of what wall-paper design should be, in spite of the superior names appended to the various designs. Apparently there is a kind of reaction against conventionalism in wall-papers, and all these are too naturalistic and too ragged in line; the "Orange Tree" (396*d*), by Mr. Walter Crane, is the best, and indeed the only one which can be called good as a wall-paper; and even that is not stiff enough in the lines of the foliage. We want another re-action in wall-paper.

The South Gallery contains some of the best of the designs for stained glass. Mr. Anning Bell's two cartoons for a stained-glass window, "The Adoration of the Shepherds" show much better figures than are usual in stained-glass design, and may be instructively compared with the melancholy and stiff figure of Christ exhibited in the West Gallery (17), by Mr. Selwyn Image, which represents the extreme of mechanical conventionalism of the figure. Various water-colour sketches for stained glass by Mr. Louis Davis, in the South Gallery, are worth notice for the excellent decorative effect obtained by the contrast of figure panels with a general surface of plain square quarries. A design for a window by Mr. W. Aikman (231) is also very successful in a decorative sense. Allied to stained-glass design are Mr. Louis Davis's studies for painted shutters in the West Gallery, especially that for the altar-piece in the chapel of the Universities Mission, Westminster (121), which in fact is almost like stained-glass design except for the treatment of the bars dividing the panels.

The South Gallery forms a curious collection of bad and good. The pair of brass candlesticks (191A) triangular in plan, are an example of structural unsuitability—awkward to handle and the wrong shape for what they have to carry. Two large altar candlesticks by the Birmingham Guild of Handicrafts (212) are good in style and highly creditable. An alabaster chimney-piece by Mr. Lethaby (which we think we have seen before) is admirable in style as a treatment of a special material; and near it is a small landscape in silk embroidery (269) which represents what should never be done in such a material. The "Painted Oak Reredos for St. Giles, Sidbury" (298) is a commonplace piece of gimcrack which should not have found place here, while on either side of it are two fine specimens of carpets, of which the right hand one (which we cannot identify in the catalogue) is the best; this has a design which makes squares of conventional floral design alternating with equal squares of plain ground, of a prevailing low purple tone, with very good effect. A painted dresser (304) designed by Mr. C. Spooner, and exhibited by the Wood Handicraft Society, is so pleasing in effect, with its black sprigs of leaves and dotted yellow buds, that one wishes it were inlay instead of painting. A store cupboard (191), by Mr. Barnsley and Mr. Gimson, is rather heavy and clumsy in its base; the upper portion, with the gilt panel ornament, looks well, but the best point in it is the manner in which the edges of the thin shelves and partitions inside are cut into a wavy line instead of being left with straight edges—a most refined little bit of detail. In this room also, among various examples of illumination, are some perfectly charming little illuminated pages, by B. A. Traquhair, of various sonnets from Rossetti's series called "The House of Life," the sonnets written out in black letter and decorated in the margin with small coloured pictures of symbolical figures. These are things quite beyond the ordinary run of illuminated decorations.

In the balcony are collected most of the designs which are more specially architectural. Among these are a set of photographs of works of architects who "were largely influential, by their teaching and practice, in bringing about and enforcing that view of the arts and crafts upon which the Exhibition Society has based itself"; architects who have mostly thought of detail more than of plan and construction; as others, making the opposite mistake, have thought more of plan and construction than of detail. That the former set have done most to promote art in the crafts is, however, undeniable; only we do not think they have grasped architecture as a whole. The "Designs for Plain Glazing" exhibited by Messrs. Lowndes & Drury show a good many examples of what can be done with this simple and inexpensive means of decorative effect. The series of illustrations of windows for Gloucester cathedral form an important exhibit, as they show how, when the general design has been made by the leading artist (in this case Mr. C. W. Whall), competent executants may be left to fill in decorative details according to their individual perception, so as to avoid reducing any part of the work to mere division of labour. A frame of copperplate illustrations to a book by Mr. Reginald Hallward (532) shows a charming set of decorative pages of combined writing and illustration. On the end wall, among other things, are some studies for portions of a plaster frieze by Mr. Bankart, who lately read a paper on the subject before the Discussion Section of the Architectural Association, and advocated the kind of rough and rounded treatment of plaster modelling which we presume is illustrated here, and which we confess has to us very much the appearance of unfinished work. The vista of the end balcony is closed by Mr. Statham's model for Vauxhall Bridge, which is illustrated in the present issue.

We shall speak separately of the designs which come under the class of jewellery and plate.

NOTES.

Municipal Trading.

WE are pleased to see the steady increase of interest which the public is taking in the subject of municipal trading. Since our first "Note" on this subject in July last the *Times* has opened its columns to a discussion of this question, and hardly a week passes without its forming the subject of debate at some public meeting. Lord Claud Hamilton, at the recent debate at the Junior Constitutional Club, made two very good points. In the first place he pointed out, as Municipal Authorities were now competing with private enterprise, it was becoming more difficult for the best men of business to serve on the municipalities, as their position was rendered anomalous. To those who have watched the tendency increasingly apparent at each Municipal election of leading men to avoid the onerous duties involved in serving on Municipal Councils, and, in consequence, the result of municipal affairs being left in hands less competent to deal with undertakings of such importance to the community, the above is a powerful argument against an unlimited extension of the sphere of municipal undertakings, and Lord Claud's second point, that as the number of municipal employees is increased the independence of their employers who are dependent on their suffrage will tend to be lost, is worthy of equal attention. Lord Claud stated that in Birmingham at present 7,000 workmen were in municipal employ, and that another 1,500 would be added were the tramways taken over, and from the above figures it is clear that a considerable influence can be brought to bear on their employers at the polls, and that the same independence in municipal enterprise that has existed in private commercial undertakings cannot be looked for.

Competition Reform Society.

WE have received the first Annual Report of the Competition Reform Society, which seems to have become practically a branch of the Institute, as it has been arranged that all communications to the promoters of competitions should be made through the Secretary of the Institute. We do not quite see, therefore, what the Society is doing which could not and should not be done by the Institute Competitions Committee. That Committee may have been wanting in vigour in prosecuting the subject; we do not say that it has been; but that we presume is the excuse for the formation of this Society. In view of the existence of the Competitions Committee of the Institute, however, the existence of another Committee, more or less in connexion with the Institute, dealing with the same subject, seems hardly logical. The Society publish a list of eighteen cases in which they have intervened to obtain better conditions for competitors. Out of these, two appear to have elicited no answer; two elicited rather vague promises of attention; eight produced no satisfactory result; one, we gather, is

still *sub judice;* and in five satisfactory improvements were brought about, three of these being cases in which an assessor was appointed when such an appointment had not been at first contemplated. Considering what average Competition Committees are made of, this is not a bad record. Still, we do not see why the regular Competitions Committee of the Institute could not have done all this just as well; and as we imagine that the success of the "Reform Society" is really due to the fact of their letters having been sent out through the Institute, the whole position seems exceedingly odd.

The Colney Hatch Disaster.

THE terrible fire at Colney Hatch calls for no elaborate or drawn-out comment from us. Its lesson is only too plain, viz: that if authorities will sanction the erection of easily inflammable buildings for the housing of a large number of persons, the conditions for such a catastrophe are officially provided, and it is little more than a question of time and adverse circumstances for it to be brought about. The adverse circumstances were in this case furnished by the wind, but for which the fire might probably have been got under with at all events much less loss of life. It seems astonishing to read that temporary buildings constructed as these were should have received the sanction of the Secretary of State; but so it is, and now that a most melancholy calamity has occurred as the result of this sanction we shall no doubt see a revision of the official decision in regard to such erections; but it is sad to think that it requires such a fatal disaster to bring home to the authorities the danger of such erections. We cannot but comment, moreover, on the extraordinary want of uniformity prevailing in the control exercised by the public authorities over the construction of buildings. At Eynsford, in Kent, we find the authorities refusing to sanction the erection of a little five-roomed cottage standing in its own garden and entirely isolated from other buildings, on the ground of danger from fire, while at Colney Hatch we find a wooden building accommodating 300 insane persons and attached to an asylum containing some 2,800 persons (including the staff), erected by and maintained by the controlling authority itself.

Picketing.

THE proposition of the Parliamentary Committee of the English Trade Unions to introduce a Bill to enlarge facilities for picketing, is scarcely likely to be received with enthusiasm in the House of Commons. It is still lawful for workmen to assemble round the entrance to a factory in any numbers merely to persuade other workmen by argument that they should go on strike. As a matter of fact, however, the assembling of men on strike in crowds round works, on the fiction of attending to argue a point, is a distinct species of terrorism. Nothing can prevent hostile demonstrations, which naturally from time to time turn to acts of violence. It would be very much better to make it unlawful for workmen on strike to assemble at the gates of factories, from which they have been discharged or have left of their own will, in any larger number than two or three. Until this becomes the law, the non-union workmen will always be at a disadvantage. Human nature being what it is, so-called "peaceful picketing" must always be a species of effective terroism.

Railway Reform.

THIS subject is still very prominent in the daily Press, and the agitation seems not unlikely to bear some fruit. The dissatisfaction and alarm caused by the continued fall in the value of railway securities is far too widespread to be silenced by the diplomatic "shelving" process which is the usual fate of shareholders' protests, and railway reform "is in the air." The recent visit of English railway managers to France for the purpose of studying Continental methods of automatic signalling may be regarded as one evidence of this. The placing with railway waggon-builders of orders for large-capacity waggons is another, although some railway authorities are much averse to adopting them. A prominent London and North-Western official has recently stated that very few of their customers would make use of such waggons. It was popularly supposed that they would be particularly serviceable in the coal trade, but they would certainly not be welcomed at the collieries, and the principal class of traffic for which they could be used was heavy traffic (such as bricks, sand, &c.), standing in the lowest class of the General Classification. Another unforeseen objection to their use is mentioned by a correspondent in last week's *Engineer*. It seems that in the London coal trade the men flatly refuse to unload any waggon holding more than 12 tons, unless their pay is considerably increased. Unnecessary train mileage is evidently being reduced. The Great Eastern Report just issued shows that, although the receipts had improved, there had been a reduction of 142,773 train miles for the half-year. This is stated in the Report to be due to the use of more powerful engines, but there has lately been a general movement among the railway companies in the direction of reducing the number of goods trains by a thorough rearrangement of the service.

The Improvement of Highways.

THE pamphlet which has been issued by the Roads Improvements Association is very timely, and the Society may certainly be congratulated upon having obtained from the President of the Local Government Board the appointment of a Departmental Committee to inquire into the administration of the English highways. At the same time it is doubtful if, on the most important points which have lately been discussed, especially the construction of new main roads from London and the large provincial towns, any changes can be effected. The tendency of modern legislation is to hand over as much as possible to local bodies the administration of country districts, and we do not for a moment believe that the State will ever take any portion of the English highways into its hands. What is needed is that, for the purpose of a limited number of the principal main roads, there should be two or three combined County Boards, and that in each county all the other highways should be in the hands of the County Councils. If the County Councils are also impressed with the idea that roads must be improved as well as kept in order, about as much will be effected as is at present possible.

Tramway Goods Traffic.

NO utilisation of the tramway system has, as yet, been attempted for the conveyance of goods on an extensive scale. Such tramways as have been established in the metropolis as well as in provincial cities and towns have hitherto found passenger traffic more than enough. There are now indications of an approaching change. In many populous districts, such as those to be found in Lancashire, towns lying at considerable distances apart are being linked together by tramway systems, and, although passenger traffic is by no means lacking, it must be clear that the congestion, common in large cities, is not to be expected. Hence the question of establishing arrangements for through goods traffic has received serious consideration. In Lancashire the tramway mileage amounts to some 750 miles, and as some of the companies control very considerable lengths of line, it would not be difficult to formulate a workable scheme. The South Lancashire Tramways and the Liverpool and Prescot Light Railways constitute what is practically one system, and by arrangement with the St. Helens Corporation and the St. Helens District Tramways Co., it would be easy to connect nearly thirty towns with Liverpool and other large commercial centres. For the purpose of dealing with traffic economically, special vehicles would have to be provided; it would be necessary to establish depôts for dealing with small consignments, and to make sidings giving access to large industrial works. At the present time the demand for traffic facilities in Lancashire far exceeds those offered by the various railway companies, and any development in the direction we suggest would certainly meet with general approval.

Restrictive Clauses in Insurance Policies.

IN our issue of December 6 we drew the attention of those who are insured against the liabilities imposed on them by the Workmen's Compensation Act to a decision which proved the necessity of carefully reading the conditions contained in such policies, and of rigidly observing them; but we desire now to direct our readers' attention to another reason for never accepting such policies unread. We find that many of the leading insurance companies are inserting a clause not only referring all disputes under their policies to arbitration, which is a perfectly reasonable and legal clause, but going further and making an award in favour of the insured a condition precedent to his right to bring any action. This extension of the arbitration clause appears to us not only objectionable, since it purports to tie the hands of the assured whilst leaving the insurer free to bring an action on the policy if the arbitrator's decision is unpalatable to him, but it is clearly illegal or void as ousting the jurisdiction of the Courts. Extremely complicated questions of all sorts arise under the Workmen's Compensation Act, and we strongly advise those about to insure to insist on the deletion of any such conditions from the policies presented to them. If the clause is good, it seems to us inequitable; whereas, if, as we believe it to be, it is bad, the insured may be involved in litigation before he can secure the benefits under his policy which he is entitled to.

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The Metric System.

AT the Institution of Electrical Engineers last week Mr. Alex. Siemens opened a discussion on the metric system. He began by giving a historical survey of the subject, and showed that the majority of the special commissions which were appointed in all countries last century to consider the question reported in favour of the universal adoption of the metric system. Sir Frederick Bramwell spoke in favour of the British system. He said that he was not an opponent of decimals but only of the compulsory use of decimals. Engineers were perfectly free to use the metric measures if they wanted to, so why should they interfere with those who are quite contented with the British measures. In his opinion it was a mistake to suppose that the adoption of the metric measures would secure uniformity, and he instanced the continued use in France of local weights and measures. He objected to anything that tended to do away with mental arithmetic, and instanced how much more readily English tradesmen made their calculations in feet and inches, pounds and ounces, and shillings and pence than the Continental tradesmen did in centimètres, grammes, and centimes. We did not quite follow his reasoning, however, when he complained that the metric system does away with "short cuts" in engineering calculations; we think that the reverse is nearer the truth. The great advantage of the decimal system from our point of view is that it shows clearly the degree of the accuracy of measurements in engineering. For example, a foot-rule may be 0·33 or 0·3333 of the standard yard. Ordinary fractions should be reserved for ideal abstractions like a half or a third. Sir Frederick Bramwell quoted largely from memoirs written by one of Napoleon's generals at St. Helena, stating very forcibly all the objections to Napoleon's metric system. It was very interesting, as it showed that no novel objection to decimals has arisen during the last eighty years, but it proves that Montholon was not a practical man.

Reinforced Concrete.

As the result of recent experiments conducted in Paris, it appears that moderately hard steel is the most suitable material for the longitudinal reinforcement of concrete, while mild steel or ordinary wrought iron is the best when concrete is reinforced by network. As a general rule, it is advisable that the percentage of metal to concrete should average 0·015 for longitudinal armatures, and 0·025 for network. Tests made upon these two varieties of reinforced concrete show that the use of iron or steel network affords better results than longitudinal bars or rods, ductility and resistance being considerably greater. It should be borne in mind that a proportion of cement amply sufficient to fill all voids is always necessary in the case of compression members having to bear heavy strains. Another point of some importance is that columns and struts must be moulded in a vertical position if elastic symmetry is to be attained. Horizontal moulding is inevitably attended by lack of symmetry, as the result of differences in the density of the successive layers of concrete. If possible, all members of reinforced concrete should be moulded in a properly equipped workshop, affording shelter from sun and rain, and facilities for the careful examination of completed work.

Flueless Gas Stoves.

FROM time to time we have in these columns warned our readers against the use of gas-stoves in which no provision is made for the eduction of the products of combustion into the open air. The public loss so recently sustained in the untimely death of Mr. Quintin Hogg, the well-known philanthropist, at the Regent-street Polytechnic, proves that the danger of flueless gas-stoves is by no means yet generally recognised. From the evidence given at the inquest, it appears that Mr. Quintin Hogg was in the habit of taking a hot bath every day at the Polytechnic, and that he was one morning found asphyxiated in the bath. The bath-room contained a gas jet, a geyser provided with a flue, and a gas-stove not provided with a flue. Death is believed to have been caused by the products of combustion escaping into the room from the flueless stove. Of course, letters from advocates of flueless stoves at once appeared in the daily Press to demonstrate that only cheap flueless stoves are dangerous, and that the writers had used flueless stoves of certain brands for years with great advantage. It is not necessary to doubt the good faith of these advocates, for it is quite possible to use a flueless gas-stove, even in a bedroom, for a long period without any *apparent* injury to health. But it does not follow that because no evil influence can be directly traced to the stove, therefore no evil influence has been exerted. Probably Mr. Quintin Hogg had used the same bathroom under similar circumstances many times before without experiencing any unpleasant results. A slight reduction in the speed of the air current passing through the room, an increase in the air temperature (causing a diminution in the weight of oxygen per cubic foot), the accumulation of dirt in the gas-burner (resulting in imperfect combustion), or a diminution in the vitality of the person exposed—any of these changes may cause an atmosphere which one day is apparently harmless, to be the next day unsuitable for the support of life. We ourselves use gas fires, gas cookers, and gas stoves, and shall continue to use them; but the absence of black smoke does not mislead us into the folly of abolishing the chimney.

Soane Medallion Designs.

WE regret that in reviewing these last week we accidentally overlooked the fact that, besides the medal of merit to "Como," another had been awarded to the author of the set marked "X*b*," Mr. C. Wontner Smith. As we observed at the time, the drawings are a very fine set, and they quite deserved this distinction, though we are still of opinion that the author of "New Era" had a claim to special recognition.

INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.—The eleventh International Congress of Hygiene and Demography will be held in Brussels from September 2 to 8, 1903, under the patronage of the King of the Belgians. The Secretary-General of the congress is Professor Dr. F. Putzeys. All information and programmes can be obtained from Dr. Paul F. Moline, 42, Walton-street, Chelsea, S.W., the hon. secretary of the British Committee.

THE ARCHITECTURAL ASSOCIATION.

THE usual fortnightly meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W., Mr. H. T. Hare, President, in the chair.

The minutes and nominations having been read, the following gentlemen were elected: *i.e.*, Messrs. G. P. Bowie, H. W. Sefton, and E. J. Walters. Messrs. H. Reed, F.R.I.B.A., and R. F. MacDonald, F.R.I.B.A., were also elected, by acclamation.

Mr. R. S. Balfour, Hon. Secretary, announced the following donations to the library: "Stray Thoughts on Architecture," by B. Braithwaite, presented by the author; "Obstruction to Light," by H. B. Molesworth, presented by Messrs. E. & F. N. Spon; and the Smithsonian Report for 1901, presented by the Smithsonian Institution.

A vote of thanks having been accorded to the donors, Mr. Balfour announced the commencement of the following classes:—"Colour Decoration," Mr. Cole A. Adams, lecturer, February 4; "Mediæval and Renaissance," lecturer, Mr. B. F. Fletcher, February 5.

It was also announced that the half-time fee in the Studio would commence on February 3.

Mr. H. P. G. Maule, Hon. Secretary, announced that the first Spring Visit would take place on Saturday, February 7, to the Victoria and Albert Museum, Kensington, by permission of the architect, Mr. Aston Webb, A.R.A.

New Premises Fund.

The Chairman announced the following donations to the new Premises Fund, *i.e.*, Mr. Jarvis, 10*l.* 10s.; Mr. H. Sirr, 1*l.* 1s.; and Mr. R. C. T. Gordon, 10s. 6d.

The Attitude of the Architect towards the Crafts.

Mr. J. Dudley Forsyth then read the following paper on "The Attitude of the Architect towards the Crafts":—

The question we so often omit to put to ourselves by reason of the familiarity of the term "crafts" is: What is the real meaning of the word, and how many of the applied arts are included in it? We may, I think, safely say sculpture, decorative painting, stained glass, mosaics, pottery, carving, plasterwork, enamels, textiles, wrought-iron work, furniture, and—though, perhaps, not strictly connected with architecture—printing and bookbinding.

These are all generally accepted and embodied in the term.

But in my opinion the word "craft" is an unfortunate one, inasmuch as it seems so difficult to dissociate its station and consequence from the word "art." A happier term for any of these crafts would be perhaps "applied art," for they all are undoubtedly "art" when conforming to the true principles of decoration, and possessing the qualities of sound technique and beauty of design. It may seem unnecessary to emphasise the point, but all the crafts I have mentioned with the exception of the last two—printing and bookbinding—are distinctly "applied." I mean they are in direct relationship to the building they adorn; are, in fact, part and parcel of its conception and completion. The fact is constantly forgotten that architecture is the mother of the applied arts, the parent from whom they spring, and not the stalking-horse on which the so-called "decorator" may hang his wares.

But the variety and complexity of these applied arts has naturally led to the evolution of the so-called "craftsman." In other words, the producer of these various arts is at the same time a designer and worker. He is therefore differentiated from the architect who, in the multitude of his duties, cannot be a worker in the same sense that a craftsman can. He may, like many architects, take lessons in modelling, and therefore be the better able to direct and control the sculpture he employs on his building, but he does not and cannot take the place of the craftsman.

One mind should dominate every building—I mean, the educated eye should be able to discern that the same master mind has subordinated every part, be it large or small, to make up the perfect and complete building. But the actual means of compassing this end is complicated by the fact that it is a physical impossibility for every architect—indeed, for almost any architect—to gain sufficient knowledge of all the varied materials at his disposal to enable him to design in them with that

grasp which the craftsman must have. It seems, therefore, that while the architect must know the limitations of the various materials he employs, and must have a general knowledge of the methods of the craftsman in that material, he must perforce leave the actual expression to the craftsman himself.

The multiplicity and variety of materials now at the disposal of both designer and manufacturer, seem to invite their free use, and many excuses are found for their adaptation. A supposed opportunity is found for the use of this or that material. The cheapness of its production will permit of a space being decorated which otherwise would have remained bare. The character and style of such decoration is too often misapplied, and instead of securing a refined and pure adornment to that space it is rendered tawdry and incongruous. It would have been much richer in its bareness.

Such results strike a harsh note; they disturb the harmony of refined work, and vex the soul of the conscientious student who by his training and gifts knows that if such work and money had been expended with proper direction and knowledge, a far better result could have been obtained. They must surely also exert a harmful influence upon the good judgment and taste of the public, which, ignorant as it is, mistakes elaboration for beauty, and misapplied decoration for art.

It should be the aim of all of us to eliminate this misapplication, to bring architect and craftsman into more complete harmony, so that each may realise that under the stress of modern conditions each must work conjointly with the other, never forgetting that the part must in all cases be subordinated to the whole. We must "piece out these imperfections in our minds," or to use a less classic quotation, and put it into the words of, say, a foreman mason, we must endeavour to give each crudity "its back day."

Let us briefly review the province of the architect. The study and practice of architecture in this twentieth century may without any hesitation be said to be one of the most intricate and difficult of professions, added to which there is that indefinite, indefinable something, be it ever so simple, which distinguishes architecture from mere building.

There are so many different branches of study, so many different and new materials to gain a knowledge of, so much to be learnt from both past and present, that the architect is really a student all his life.

The architect's part in the decoration of a building is a large one, for he must, in my opinion, be able to direct the subjects and their general proportions and styles. He must be able in designing his building to introduce the various arts for its adornment in places where their introduction will materially assist it, supposing such ornament is not merely the enriching of constructional features, such as the way in which sculpture is often employed, but is only to emphasise the meaning and purpose of the building.

The value of an imposing group of sculpture, the use of other carving, the colour schemes and the kind of materials for their production, the value and use of frescoes and the styles and subjects of them, the treatment of glass, must all be under his direction, and he should know how each is to be treated and made one with the architecture of his building.

The architect will know that in introducing his group of sculpture the elevation of his building can be either very materially enriched or ruined. He will therefore direct the exact scale of figure, a certain line in its composition, and the breadth of treatment necessary for its value. The sculpture becomes part and parcel of the architecture, and for that purpose must be architecturally treated; it must have no appearance of being foreign to the general scheme, or of something just modelled and placed there irrespective of architecural proportions.

Therefore the architect alone can know what is best required upon these lines for the adornment of his building. These conditions similarly apply to most of the decorative art, which must be considered architectural adornments. In mosaics and painted panels, frescoes, and other features, utility, style, scale, line, and the proportions of general massing of colour and subject are the fundamental points to be studied, and the direction of them must come within the province of the architect. He should convey his ideas of them to the decorator by means of rough sketches.

Given that an existing building requires decorating, if that building is of considerable consequence because of its purity and refinement of style, and the architect who produced it was a famous man, it should be an architect's province to direct the character and style of the necessary decoration, because only an architect who has made that style his especial study, and whose experience in construction enables him to appreciate and follow the beautiful characteristics in that style, and who has paid particular attention and studied the individuality of that famous man, can be competent to know the best decorations for it. Even then there is danger in touching the building.

Let us now glance over the province of the decorator, and under that name I include the sculptor and painter and all other workers in the applied arts. Like architecture, decoration covers a very wide field; a field which should have a boundary line marked by an architectural wall to prevent decorators straying from within its precincts into unknown spheres. The decorator usually commences his career by serving a term of years at a special craft in which he obtains a thorough technical grounding. As a sculptor he becomes an expert in modelling and carving, and is able to execute commissions for figures in various materials including bronze. His province in this art allows him considerable scope and freedom, but in carrying out his commission too much freedom cannot be allowed for he would doubtless be running amok with the architect for whom the figures are being carried out. He will receive general instructions as to scale, breadth of treatment and other views of the architect, all of which are necessary to render his work strictly architectural and to be in harmony with the building. It is the decorator's province to execute the commission on these lines. Experience and efficiency in his own particular material aid him in actually producing the work, and here the architect will not presume to direct. The decorator—if he be a painter—will receive similar directions from the architect, and to him are allotted conditions comprising subject, scale, and general scheme of colouring. It is not his province to choose these because he cannot possess another man's individuality, and cannot therefore be competent to know the character and style for the decoration such as were originally intended by the architect. In a case where, given a free hand to decorate a Renaissance building, good or bad as it might be, the decorator is very apt, for many reasons to go wrong. It may happen that his experiences as a painter of architectural decorations, have been mainly confined to the Gothic school, and no matter how skilful he might be as a draughtsman or colourist, the influence of the Gothic is bound to make itself manifest in his work, and even the rudiments of subject, scale, and general scheme of colouring in a Renaissance decoration will not be grasped by him, and a poor scheme will result unless he independently seeks the advice of a competent architect. The painter may be a man who prefers to ignore character and style, and go for something which is quite the outcome of his own invention and fanciful ideas. Then, provided the building he is to decorate be one which glories in the beauties of a pure order, and as such is a representative example, the result of his labour is deplorable, and the building spoilt. The decorator here who is inexperienced in architecture, as is so often the case, will do many foolish things, and unwittingly quite disregard obvious conditions existing in the main, and various details in the construction of the building.

His own invention of style and fanciful ideas of colour and material cannot lend themselves to be in perfect harmony with this beautiful building. Some of the most delicate features in its architecture, characteristic mouldings, valuable flat surfaces—which were probably never intended to receive much if any colour—will all come in for their share of his paint brush, or be chiselled away to receive some incongruous and foreign material. A free hand in a case of this kind should not come within the province of the decorator, even though his knowledge of, and respect for, architecture be recognised as experienced. An architect should supervise, but only the united and harmonious endeavours of both will produce true results.

Let us now review examples where the architect collaborates with the decorator. The one who has conceived the main and grand construction confers with the other, from whom is required the actual production of his art for its adornment. Let me then firstly deal with sculpture, for I consider that art, when applied to architecture, the most difficult to treat.

For example, a commission for a group of figures upon a pediment is placed with the sculptor by the architect for execution. The architect will, in conferring with the sculptor, show him the elevation of the building it is proposed to adorn, direct the dimensions and scale of the group, and give the subject for it; and together they will discuss points on treatment in technique and manner of style, and cost. Having clearly understood the views of the architect, and having grasped the necessary architectural requirements, the sculptor proceeds to make rough sketches, to about 1-in. scale, for the composition of his group, which he is often pleased to do in various materials. He may elect at first to sketch in different media upon paper the general lines of his group or he may—as in my opinion he should—commence right away with a small scale sketch in clay or wax. In this group the most important point which will tax the sculptor's skill is that of composition, and in that particular alone he will find it necessary to make and experiment with many rough sketches for his group of figures. These rough sketches are made to arrive at correct positions and pose of the figures, and they are put in in a very broad manner. In them detail is not considered. The sculptor is mindful of the fact that the group is to adorn a pediment, an architectural feature in the elevation which will require his every consideration. It might be a great distance from the ground, and have much or little projection, conditions which will greatly influence and govern the treatment of the group which is to surmount it. Difficulties of conceiving proportions as affected by foreshortening have to be overcome, and they can be studied in the initial stages of rough sketches together with the composition. A templet is prepared to 1-in. scale to show the general lines of the architectural elevation, the pediment under consideration and a slight indication of the character of detail surrounding.

The object of preparing this templet is, firstly, to be of material assistance to the sculptor in modelling his sketches; secondly, to keep the elevation of the building vividly before his mind, so that he can well realise the conditions and be directed by them.

The rough studies as they progress will be repeatedly placed upon the pediment, and the points of composition, proportion, and foreshortening of the figures in them thoroughly considered until they are decided upon. During this stage of his work the sculptor is resorting to the use of the living model, for in modelling the human form, no matter how naturalistic or conventional it is to be, the use of nature cannot be dispensed with. The actual presence and the movement of a limb of the living model will suggest ideas in composition which the most practised mind cannot always conceive; so that in the rough sketches for the composition of the figures in his group, and at every other stage during the process of modelling, the sculptor should always have nature before him.

From the rough composition study the sketch is advanced, and subject, character of costume, and other attributes are thought out and designed. The sketch having been carefully worked up and having reached a more finished stage, and being satisfactory to the sculptor, should be placed upon the templet for the architect's inspection. Indeed, the architect should frequently visit the studio and carefully watch the progress of the work, show interest in the sculptor's efforts, and free expression of opinion should be indulged in. The architect must be satisfied with the design at this stage because the group is about to be modelled to the actual size required, and any necessary and important alterations had better be made in the small sketch. In modelling the large group the sculptor naturally selects the medium of clay because of its pliability and softness. The setting up of a large group for modelling requires considerable skill, for each figure requires to be supported by irons, stout wire, and other hard materials which are built up on the stand and which more or less represent the skeleton of the human body. The vertebral column is set up in stout iron, supported by a stronger piece which is fixed to the stand, and to it is attached the cross pieces

and angular piece made to represent the bones of the legs, arms, and phalanges of the hands and feet. The utmost care and skill is wanted to build these up so that the pose of each skeleton shall be in its proper place, for it cannot be altered afterwards. The sculptor is able to build this up from the measurement and positions of the figures in his careful sketch. Thus far, not only have technical points been studied, but the general lines of utility and character, in so far as their application to the building is concerned, have guided the artist in his ingenious creation. As yet, however, he has only a fair start and a good and sound basis to work upon; the finished piece from his hands has yet to come. The applicability of his studies and careful sketch, although appearing to the architect and himself as satisfactory, does not obviate the necessity of its more careful study in the full size model; and no matter how appropriate his work thus far seems, the sculptor in entering upon his next task is, for many reasons, apt to go astray. The style of treatment best suited to its architectural character, the manner of technique most practical and artistic for the material, expression, detail, grace of line and finish, have all to be managed and executed by him upon the large model, and the advice and suggestions of the architect on some of these points will be very necessary. Regarding the style of treatment necessary the architect previously conveyed in a measure his wishes and ideas, but now, with the final modelling in course of execution, he is better able to define them. He will now find it much easier to express his views upon the kind of conventionality he might require, and how he would like the sculpture kept in the key of bold shadows or otherwise, for the large group is approaching its more definite form, and these points are easier of discernment.

Concerning the manner of technique most suitable for the material, much might be said, but briefly to illustrate its importance let it be known that the treatment of modelling for one material will not suit another. For instance, a delicate detail of very slender proportions which is practicable in the material of bronze would not be sound in marble, and still less so in stone. It would be misplaced labour in either of the two latter materials, because not only might it be extremely difficult to carve, but it would be susceptible to damage or soon destroyed by climatic agencies. Again, the texture of surface modelling in the one material must be quite different in the other. The dulness and density of stone allows it to hold shadow which cannot be felt in the more transparent quality of marble. The contrast between both of these materials and bronze is, of course, very considerable. The colour and strength of the latter are such that a freedom and boldness can be practised in the modelling which would be quite impracticable in either of the former materials. Moreover, expression and effect can be facilitated in this by the use of acids, which produce additional colour. It will be seen that the sculptor has to study these materials and model for them, by executing in his modelling technique and texture which he will require to be carved or cast. It will also be seen that the architect will require to possess a general grasp of these points so that he should be competent to select suitable material for the enrichment of his architecture. I repeat, the sculptor is very apt to go astray when executing his full-size model. Let me suggest where. In the creation of expression, grace of line, detail and finish, the temptation to lose sight of architectural conditions is very strong. With the living model before him, draped in the costume which has been difficult to arrange, attended with splendid detail, attributes of symbols and trophies and other matter inherent to the subject, the sculptor will see so much that is beautiful and artistic that his impulse is to copy it all. He is so fascinated by all the expression, detail, and grace of line which appear before him that the applicability of his group to the pediment it has to adorn is very apt to be forgotten. He is greatly inclined to introduce too much rather than tax his ingenuity to find out how much can be left out, and in modelling a large subject which is to be applied to architecture, these errors are too easily fallen into. The difficulty lies in the distinction that architectural work is vastly different from modelling for the pedestal in the gallery.

It is the architect's province to see that these errors are not fallen into, and criticise accordingly, and he and the sculptor must be agreed that the model, when finished and cast into plaster, will be suitable to be carried out in its final material. But before the final stage is entered upon, the cast should be temporarily placed in its position on the building, and it should be tinted to resemble as near as possible the material it is to be worked in, so that the architect and sculptor can see the effect. This is a very necessary precaution, and one which should in all cases of the kind be exercised. If the group is to be in bronze, the sculptor has comparatively little more to do with it, having only to touch up the wax impression prepared for him previous to casting in the metal by the bronzefounder. But if the work is to be carved in stone or marble, there will be a great deal that requires his supervision and the personal application of his skill. Commencing the cutting of the block of stone or marble, the first process is that of pointing, and this is usually done by an assistant, who as a rule does little else. Pointing is a process which enables the pointer to cut away the material until very nearly within the surfaces required, and it is done by the aid of an instrument which is so constructed with a gauge that any point on the model can be accurately found in the material. Points all over the model are taken and closely put in in the material, so that accuracy of measurement is obtained and a guide found for the carver who now follows. For convenience and care this is done in the studio, where the group is generally finished. Technique in carving will require considerable direction. In marble or stone the use of the file or rasp should be avoided, because they are apt to render the work hard. The finest and most artistic effects are obtained by a dexterous use and clean cut of the chisel and clawtool; the latter, for large and bold work, should be very freely used. The architect should have a general knowledge of the methods of carving, and have his own ideas concerning them.

I have dealt somewhat freely and at length with sculpture because I feel it necessary to emphasise how intimate must be the relation between the sculptor or decorator and the architect; and it will be seen also how important it is that the architect should have a very definite conception of the methods and difficulties in sculpture, and how impossible it really is for him to design with freedom in a material of which he can but gain general knowledge.

The principles in the application of the art I have attempted to describe are involved in most of the other decorative arts, but, in my opinion, in a less important manner, for the application of figures in form requires far more skill and study than is necessary in applying figures in colour. The latter has only one aspect in its composition, whilst the former must be correct from every conceivable point of view.

Proportion, scale and disposition of wall paintings, mosaics, opus sectile, stained glass, carving of ornament, plaster work, pottery, &c., must be directed by the architect who should have a general knowledge of the technique of each separate treatment. He should be the better judge in placing these decorations, for he, having designed the building, will know the value of enrichment in his architecture, whether it be in form or colour.

There are probably no two arts more commonly used in architecture than those of the more ornamental carving or stained glass in their elaborate or modified ways.

With reference to the former, there are so many good examples to be seen, so much that is ancient and modern which the student-architect can revel in, that the study of it becomes a standard one, and is one of the first which he takes to in his early career. I do not know why he should be set to model or draw from the cast, for any other purpose than to obtain facility for freehand drawing, a knowledge of what carving is, how it should be applied, and to become versed in the various styles and orders; but I do suggest that there is an influence attending the study of this art which is acquired thereby, and usually unnoticed by him. It lies in the assumption that, provided the student attains excellence in this art he develops a readiness for grasping more easily and freely the general principles of the applied arts. His quickness of perception is, in my opinion, trained more by this influence than any other course of study. The same agent is at work with the professional carver. A carver who is at first trained as a wood carver very often develops an especial aptitude for doing other things. He possesses an expert and dexterous touch derived from the nature of the material and the use of the great variety of tools necessary. A carver whose early training is on stone or marble does not acquire this facility. There are many men, competent workers in several of the decorative arts, who were in their early days trained as wood-carvers.

There is probably no applied art, which, in its manufacture, has more processes and technical stages to go through than that of stained glass, and a word as to its application may not be out of place. Stained glass is the most vivid kind of coloured decoration. In the ever-changing light of day the luminous quality of stained glass powerfully affects the lighting of the interior and its coloured decoration. This should be borne in mind by the architect, who does or should direct that coloured glass upon the south side of his building is not treated in too warm a scheme of colour and so on. In a window the massing of colour and of figure subjects make very important architectural features in the building; the distribution of coloured masses conveys proportion, and the dimensions of figures, scale, and a window might not only in itself be ruined, but the whole interior seriously affected by the want of care and study of these points. It is in my opinion most essential that the designer of a window should visit the building, carefully study the architecture and architectural conditions attaching, and make rough sketches on the spot. The architect should insist upon these precautions being taken, for a happy coloured scheme cannot be conceived without them. The habit of adapting a figure to a space just because it fits should not be encouraged, because it is invariably found to be a faulty one. The adaptation of a figure designed for one window cannot comply with the conditions of a similar window in a different building.

Throughout the various stages of stained glass manufacture the worker himself is often perplexed about his results. He is continually experiencing the feeling of uncertainty for the effects he is striving for. So many points in the material and process are apt to play him false. It is also sometimes bewildering to him to know and to gauge the key of coloured glass to use, the strength of painting, and its breadth of treatment most suitable for the building. Experiments and trials are inevitable. A stained-glass window, or a portion of it, should always be temporarily placed in its final position so that its effect and value can be truly realised. To give a thorough description of the art of stained glass would mean an extremely long paper, hence my brief reference to it, for it was only my intention to touch lightly upon the descriptive side of one or two arts, my motive being to point out the difficulties of technique and design in the applied arts, and to endeavour to show how hard the architect's position must be concerning them. Reference to all the arts mentioned is quite unnecessary because the principles I have tried to mark out which apply to one apply to another.

The position of the architect towards the craft is a difficult one. He in turn is apt to stray in the utilisation of this or that craft, for the want of technical information. Therefore, I think his study of decorative arts should not be neglected, for it is very necessary; also that his studies ought to be confined more to the technical side of them, rather than contriving to excel in the artistic productions of draughtsmanship, and I venture to express the hope that such technical studies will be set the students in the Architectural Association's new school. On the other hand, I suggest that the decorator, in his early studentship and in later life, does not give that thought and study he should to architecture, which is so important for his work.

The attitude of the architect should be one of collaboration with the decorator.

He cannot possess the sound grasp of technicalities of all the decorative arts which he should have, as I have attempted to show, for the complexity of work of all kinds in his profession renders it impossible. He must have confidence in his decorative artist. I would plead for the more intimate relationship between them, that one shall become used to the methods and feelings of the other. In the production of a noble conception in the art of architecture, harmony and goodwill must pervade the minds of the producers. Each must be familiar with the taste and ideas of the other. The architect who conceives the

noble idea, must extend personal feelings of consideration to the workers who are to build it up, so that they feel their efforts encouraged and their labours appreciated. Their mutual and friendly efforts will produce happy results, and the structure in stability will be established and in the refinement of beauty adorned.

Mr. Halsey Ricardo, in moving a vote of thanks to the reader of the paper, said he did so willingly, although he was to some extent out of sympathy with the paper. To begin with, he had a feeling of personal shame when he heard the description of the Admirable Crichton that Mr. Forsyth gave—all the qualities of what an architect should be being tabulated and poured out in a fine stream, remembering that he had, on occasion, allowed himself to be called an architect. The ideal put forward seemed to be a somewhat superhuman one, and it reminded him of the definition of a poet given by his tutor to the Prince Rasselas. The Abyssinian mentioned one quality after another in unending succession until at last the Prince broke in with, "Enough: thou hast proved that no mortal can be a poet." He (the speaker) thought that according to the standard of an architect set up by Mr. Forsyth, no mortal could be called an architect. Still there were such things as architects, just as there were poets, and it was, perhaps, well to have the ideal architect put before them. The lecture represented a very exalted state of affairs. There was the architecture which was organised; then there were the applied arts, which Mr. Forsyth gave away—they did not know what to do or what they had to do—then there was the idea that the result was an universal want—that this refined, sublimated architecture was what the people wanted. When we talked about architecture, we had a happy way of thinking that we meant by that word one recognised accepted thing, but we often did not mean that at all. There had been several kinds of architecture. There was Egyptian architecture, the product of priestcraft and quietism; there was Assyrian architecture, which was a warlike architecture; then there was Grecian architecture, which was pure sculpture—an architecture that was generally in the mind of your sculptor at the present day: there was always a Parthenon at the back of his mind, and that ideal he reproduced when he could, with results, as, for instance, in the case of the British Museum; then there was the architecture of the Roman Empire, which took an engineering form, which was a basis or block on which was put an embroidery of Greek art, which obscured its intrinsic quality, to us, to a large extent—we thought of it decorated with Greek embroidery. Then we came to the Mediæval architecture—a romantic architecture—which we, in the twentieth century, mostly had in our minds when we talked about architecture. Mr. Forsyth had stated, as many others had done, that architecture was the mother of the arts; but, really, before ever architecture was there were sculpture, painting, song, dance, poetry, weaving, &c., and architecture, comparatively speaking, came late. If architecture were the mother of the arts, she had been adopted so, though no doubt she was intimately associated with the applied arts, which were the bloom and completion of architecture, and the most striking expression of which was to be seen in Mediæval work. After the mediæval work, there was what we call the Renaissance, which was the architecture of classical scholarship; then there was that religious and romantic awakening, the architecture of revived mediævalism, and that again has reverted to the architecture of scholarship; and now we were exercising the architecture of organised scholarship and we ought to ask ourselves, especially in talking about the applied arts, whether we were not prolonging a thing which had reached its climax. Architectures of various kinds travelled along their appointed roads—there was the bud, the blossom, and the fruit—and then there came—he would not call it decay—but the pause of ultra-maturity—another wave came, and submerged it and put something else in its place. Each new wave was at its beginning in the nature of a try back, but the altered conditions under which each new wave flowed led to different developments. But although we are the heirs of the whole past of the work, in harking back we should base ourselves on forms that had spring in them—on the bud rather than on the blossom or the fruit. It seemed to him that they had been invited to prolong a tradition of what was made and done in the times when all the crafts and arts were an active going concern, at a time, now by the same showing, when there was not the same spirit of collaboration. Putting the matter figuratively, he might say this: Imagine a person—a lady whom they would call Architecture, residing with various handmaidens (the Applied Arts), and especially two: Painting and Sculpture. We must not call this lady the mother of the Applied Arts, but the adopted mother, for there was a difference. The handmaidens spent their time in doing all they could to make Architecture beautiful, embroidering dresses for her, &c., until she was a figure of enriched and cultivated beauty. By and by the handmaidens grew up and became of age; "they came out," and were well received because they were beautiful and had great personal attractions. One of them, Painting, was given a glass, was surrounded with a gold band, and she was taken off to the harem of a connoisseur. Another, Sculpture, became a private secretary, because of the great beauty of her handwriting and the stories she told. Architecture, being more or less left alone, began to import her clothes from abroad: they were not made specially for her, but she adapted them to her figure, and for the ordinary purposes of every day use "reach-me-downs." And so it went on, and we were rather in the position of seeing this lady grown old, grey, and divorced from her husband—who was Popular Enthusiasm—and left very much alone, or sought after by people who had a bent for the study of family histories and phases of bygone beauty. Popular Enthusiasm, the husband of Architecture, was away, coquetting with Literature, Philosophy, and Music, and, at the present moment, so it was said, was wedded to Science. That represented the situation at the present moment. Sculpture and painting had left architecture altogether, and were advanced to separate arts demanding special qualities for appreciation, though now and then there was sculptor or painter who touched popular fancy in a fine sense. In sculpture Alfred Stevens with his British Museum Lion, Barye with his animals, and M. Bartholomé, in his "Monument aux Morts," and, in painting, Ford Madox Brown ("The Last of England"), Holman Hunt, Watts:—These touched the people at large, but for the most part fine art was an exotic cult; it did not really belong to them. And so this scholarly architecture which was being practised now was again a cult; it was not popular. If they thought of the genesis of some of the things now being done, the process of doing them would be found to be something like this. Take the case of a town hall. A committee was appointed, and they did not dare to appoint an architect, proposing instead, a competition; and they did so because they were in this position; not one of the members, as a rule, had a farthing's worth estimate of any other committee man's opinion, and should there be a man entitled to an opinion on architecture he would not have the courage to back it up. An assessor was in consequence appointed, and he said a particular plan was the best. The Committee accepted the design selected by the assessor, but they did not see why it was the best, nor did they suppose they would be able to. The architect proposed a building which was a shibboleth to them, or a kind of mystery. The architect imported into it a quantity of sculpture, which the reluctant Committee were got to think the building must have. The sculptor produced his models, and he worked them up to a point which showed the sculptor intended to carve stone models of his clay models, and this work had as much connexion, when done, with the building as the usual ornaments on the mantelshelf. When the work was done—not *in situ*, but in a studio and under artificial conditions of light—it was stuck up and people professed themselves glad that they had got it, though they did not know why, and really had no feelings at all. It was the same with painters. The art of decorating buildings had lapsed. Artists made sketches on canvas in the studio, and at the last moment they were stuck up in their place. Such things were not done in the time of one's ideal—in the days of cathedral building, when sculpture work, for instance, had a personal charm about it. Work now lacked a popular demand: it was done by architects who had to persuade clients to do something they did not want, and arrange with builders to do it for a sum which it could not properly be done for. An architect had to deal, too, with builders who were not builders, but financial organisers, and whose chief concern was as to when the work was to be finished, and how the certificates were to be managed. Builders had to see that the individualistic mysteries that issued from the architect's office were got done in time, and the workmen, unable to see the drift of these details, did their work doggedly as so much taskwork. There was organised scholarly work, which represented a fine intellectual effort, but it had a narrowing effect. And the net result of this individualistic art, this dominant and omnipresent architect was that we were trying to prolong the traditions which had been broken into by the processes of the present day; and the various traditions which were not based on the materials but on the usages and practices of past times, gave a result rather like what Tiresias said to Ulysses, when he met him in the under-world: "We live in a grey twilight; there is no sun and there is no night"; and if we walked from Marble Arch to the Bank, we must feel inclined to repeat that. There was no real life, but only a semblance of life. There was something we could call scholarly architecture, but that had reached to the end of its road, and he did not think that any amount of guidance from the ideal architect would infuse it with the sprouts of a fresh life.

Mr. R. H. Weymouth, who seconded the vote of thanks, said he was glad Mr. Forsyth had approached the matter from the craftsman's point of view. There was a vein of humour running through the paper, for the words occurred again and again that an architect *should* do this and that—not that he *did* do it. One thing had not been touched upon, and that was the training of the craftsman. He thought that a certain number of craftsmen should first of all be trained as architects in architects' offices, for a man thus trained who later took up, say, plaster work, or decorative work on buildings, got an architectural basis for dealing with architectural work afterwards which could not be got otherwise. If this could be done, the quality of the craftsmen would be improved greatly. But the craftsman and the architect should be well-educated in ordinary school learning before turning to either craftsmanship or architecture, for a general basis of a good, sound, public school or Varsity training was a great help to either. As a rule, the better educated a man was as a boy, the better qualified he was either as an architect or craftsman. As to the dealing with an elaborate colour scheme or such sculpture as was referred to by Mr. Forsyth, that, he thought, was an exceedingly high branch of architecture, and in one's earlier days one rarely got near it, and, therefore, the number of men really qualified to get out a colour scheme, &c., for their own buildings was very limited. The selection of the craftsmen to decorate a building should be made with great care, and those selected should, as far as possible, have a free hand. He was in the Law Courts recently, and he saw a specimen of Street's scholarly decoration, now sadly neglected. Mr. Forsyth had a good deal to say about the sculptor and the architect, and had said that when a large group of sculpture was nearly finished that was the time for the architect to come in and give his direction, as then the sculptor was a little apt to go astray; but he (the speaker) thought that, on the other hand, the more advanced the work was the less the architect should have to do with it and the more the sculptor. When the sculptor put his work upon a pediment, say, surely he could judge as well as, or better than, the architect upon the faults he had made in detail. He did not quite agree with Mr. Ricardo as to Public Enthusiasm being wedded to Architecture. The allegory was a pretty one, but it would be difficult to prove, and he somewhat doubted its historical basis. But there was an important point in Mr. Ricardo's remarks, *i.e.*, as to personal charm in buildings. He did not think Mr. Ricardo was right in his exceedingly gloomy view of how things architectural were managed nowadays. He felt that if an architect liked to put his personal interest in his work, and went and saw more of the work as it progressed, and did less by means of writing instructions from the office, he could, as it were, get past the "contractor" and into touch with the craftsmen or the work-

men who really did the work. One of the ablest men he knew made this a practice, and so always got into immediate touch with the men who did the work. In that way an architect could get things done his own way, and have them done properly, with a real feeling for architecture.

Mr. Gregory Collins said that, after what they had heard, he thought there was a huge mass of debris about, and the task was to get the Phœnix to rise from it.

Mr. W. A. Pite said they had had two most interesting views of the subject presented to them. Mr. Forsyth had taken them to the heights of what they ought to do, but it was not the fortune of most architects to have the opportunity of erecting pedimented buildings surmounted by groups of sculpture. Years ago men of the Gothic school, as G. E. Street and Wm. Burges, thought it necessary or wise for the architect to design the decorative parts of his buildings; it was even reputed that Burges designed his own nailheads. We were indebted for the other view to Mr. Halsey Ricardo for his interesting and suggestive remarks.

Mr. C. Tucker, a craftsman, said that Mr. Forsyth had been amazingly candid. The position of architect in relation to the craftsman had been drawn with a free and a very just hand. The craftsman, in the work which he produced, should not only have consideration for the work of the architect, but should subordinate his ideas to the main principles which the architect wished to embody in his building. This was, unfortunately, by no means always done, and that was why so many disasters occurred in decoration. A craftsman in one department was called in to exercise his craft in another. Some general idea of what the architect wanted was of great help to a craftsman, not only in suggesting to him the treatment of the subject, but also in helping him to understand what the architect's own ideas were with regard to his own building. He could not agree that Mr. Forsyth was telling the architect what to do: Mr. Forsyth merely said that the craftsman, in treating only a part of the building, should regard the whole and not sacrifice the whole to the part which came within his province. He could not help thinking that even in some of the best periods of architecture such mistakes had been made. He supposed that all agreed that the frieze of the Parthenon was one of the wonders of the world, but when it came to a consideration of the pediment he could not help thinking that the sculptor "kicked over the traces," and put his sculptures on a shelf. If the architect had kept a firmer hand upon the reins even the Parthenon might have been improved in the treatment of the sculpture of the pediment, for the sculpture was so extremely fine that he felt, as he saw it in the British Museum in all its mutilation, that we see more of it than the Greek people ever saw when it was in its original position. If such a thing could happen in the hey-day of architecture, it was very likely to occur in these days, which had been referred to by Mr. Ricardo in such pessimistic language. Out of chaos it was to be hoped that order would come, and he thought a ray of light was already shining. He thought that as to bringing the architect and the craftsman into closer relationship, instead of it being a retrograde step, it was what would be called in scientific language the reversion to type—the basis or beginning of a new life both for architecture and craftsmanship. They necessarily depended one upon the other, and certainly craftsmanship was dependent on many of the suggestions of the architect. Craftsmen must be well trained, of course, and be conversant with what had gone before; but so must the architect. He did not agree that the craftsman should be allowed a free hand, for he thought the result was often deplorable. On the other hand, consultation between the craftsman and the architect was often of great advantage to both. He had been on works where the architect had modified some of the proportions of his work—not the large structural features, but such things as mouldings, &c., which were to receive colour—as the result of a consultation with the craftsman at an early stage of the work, and the result had been most satisfactory. He welcomed a return of a brotherly sympathy between the architect and the craftsman.

The Chairman, in putting the vote of thanks, said he thought the discussion on the subject was opportune. There had been during the last few years a very great revival in the crafts, so much so that at the present time there was a tendency for the crafts to be given rather more importance than they ought to have. Many buildings one saw—both actual buildings and illustrations—in which there was no architecture, and all craftsmanship: the building was simply a sort of shell to hold the works of so many craftsmen, and frequently these craftsmen worked without any co-ordination amongst themselves. Each man followed his own sweet will, and, although each piece of work might be extremely beautiful in itself, each work suffered from the fact that it did not bear the relation to the others which it ought to do. Therefore, he thought that Mr. Forsyth's view was a valuable one, *i.e.*, that all the work of the craftsman in any particular building should be, within certain limits, directed by one mind to some extent. One saw the necessity for this in the work of many sculptors. It was a very well-known fact that there was hardly a sculptor who could design a pedestal for his statue, and that was simply because, like other craftsmen, sculptors thought simply of their own piece of work. They thought of nothing but the figure, and they despised or ignored the allied arts and crafts, and had very little appreciation of scale; and in that matter of scale most pedestals to statues failed. Mr. Ricardo had given them a most entertaining little discourse, but he (the Chairman) had tried hard to make out what Mr. Ricardo meant, and he was hoping that he would sum up what he was leading to, but Mr. Ricardo did not do that, and he (the speaker) was left rather in a fog as to what the upshot of it all was. There could be no doubt that Mr. Ricardo was a dreadful pessimist. Architecture at the present day was, according to him, on the wrong lines altogether, and building, too, which, of course, was a great pity. No doubt what Mr. Ricardo meant was that we are wrong in attempting, to the extent we do, to follow tradition. To a certain extent he agreed with that. It was wrong for a man to copy a certain feature and introduce it into his building simply because somebody else had done it. It was wrong to do that unless attention were given to the adaptability and appropriateness of the feature to its position. Mr. Ricardo had given a very pretty picture of the way certain features of mediæval buildings grew; that was all very nice, but there was no evidence to show that such work was not guided by some master mind, some general director, and that the work was not evolved from some general scheme or idea. Then there was that fine illustration of architecture and the handmaidens. It was no doubt true to a certain extent that painting and sculpture had deserted architecture and had gone on independent lines of their own, but he rather gathered from Mr. Ricardo that this was a very bad thing for architecture. If that was so, he thought it was a much worse thing for painting and sculpture. The most effective, the finest and best, sculpture was that which was associated with architecture, and the same applied to painting. If the sculptors of the present day were content to do a little statue to stand by itself somewhere, so much the worse for them for they had not much appreciation for the greatness of their art. If a painter was satisfied to paint a picture to hang in someone's drawing-room, and if that was the highest aim and end of his art, so much the worse for him. There was a tendency at the present day for every one to specialise, and that did not seem to be a wrong tendency. A man who studied and followed one art or work was more likely to excel in what he undertook than the man who attempted to understand and excel in many things. If that were so, it was too much to expect an architect thoroughly to understand all the technicalities, &c., of different crafts, and therefore, in introducing the crafts into his building the architect ought to give the craftsmen a free hand within certain limits. The architect, of course, should decide where the sculpture or modelling should be introduced, and, approximately, the size and scale in relation to the surroundings, but beyond that he did not think the architect should go, and if he employed a craftsman who was in sympathy with the architecture, a much better result would be obtained by giving the sculptor a free hand. Of course there were exceptional men who could take a more prominent part in the details of their work than that. There had been great architects in the past who had been able, practically, to design every part of their buildings with great success, but the majority of men must be content to take a certain amount of the work in a building to the craftsman.

The vote of thanks having been heartily agreed to,

Mr. Forsyth, in reply, said he must first refer to the beautiful allegory which they had heard from Mr. Ricardo, though he was also at a loss to know how it applied. He did not understand, for he did not consider architecture the ugly mother of those beautiful handmaidens. [Mr. Ricardo: Pray do not call her ugly. I said adopted mother.] He thought the inference to be drawn was that architecture was the ugly adopted mother. The picture drawn by Mr. Ricardo as to the competition for a Town Hall indicated a very discouraging state of affairs, especially to the architect, whose work and the work of the decorator it affected injuriously. Cost, too, was another important restriction; but we had to frame our art and ideals on modern conditions, and it must not be forgotten that the time when the Parthenon was erected was very different from to-day. There was not that rush nor that search for inexpensive art that there is now. He quite agreed that craftsmen should have a good architectural grounding, for they could not understand how to apply their craft to a building unless they could appreciate the architectural points; and too many craftsmen were deficient in the requisite grounding. As to a free hand for the craftsman, that should be given only when the craftsman thoroughly understood the conditions. It was the architect's responsibility to instruct a decorator as to scale, light and shade, proportion, &c., but after that the decorator ought to have a free hand, especially as, in utilising material, the decorator found that his design altered itself, so to speak, and as he worked changes were suggested, so that it was impossible to have a set rule beforehand of what the result is to be. He hoped that in time to come the decorator would extricate himself from the debris referred to by Mr. Collins. He hoped he had shown in the paper that in his opinion a decorator must subordinate his ideas to the main idea. As to the Chairman's remarks that there were some buildings which were all craftsmanship, that was the very thing we wanted to avoid. The cheapness of material was to some extent responsible for that.

The Chairman said that the next meeting would take place on February 6, when Professor Baldwin Brown will read a paper entitled, "What is the Real Value of Greek Work to the Modern Artist?"

The meeting then terminated.

The Home Office has this week informed the hon. secretary of the Royal Architectural Museum, Mr. Maurice B. Adams, that the King has graciously consented to the continued use of the term "Royal" in the name of this museum after its transfer to the Architectural Association has been completed.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE sixth meeting of the current session was held on Wednesday evening, January 7, at the Rooms of the Association, when the Chairman of the Section, Mr. Geo. H. Smith, presided, and Mr. J. Watson Moyses, Barrister-at-Law, attended as Special Visitor.

Mr. J. H. Pearson read a practical and carefully thought out paper on "Some Points in Ancient Light Practice," which was illustrated with some diagrams specially prepared by the author for this occasion. The acquisition, and next the loss, of a right to light were first dealt with, and many practical hints were conveyed in the next section of the paper, which consisted of suggestions as to methods of recording old buildings. Then, skating lightly over the thin ice of "compensation for damage," and avoiding in diplomatic language the tendency to make capital out of an alleged right to light by dominant owners, the author gave some instances from his own experience from town and country cases, which were more readily explained by reference to the wall diagrams. The importance of readily forming an opinion when surveying a building site was emphasised.

Then, referring to recent legal decisions and the inferences to be drawn from them, Mr. Pearson dwelt somewhat in detail on the principles which apparently guided the Judges,

and stated fairly what the law on the subject was, as it at present stood. Finally, dealing with the collection of evidence for a case, the author revealed his intimate knowledge of his subject, and gave most valuable suggestions for this all important branch of practice.

Mr. C. H. Brodie opened the discussion which followed, and proposed a very hearty vote of thanks to the author and the Special Visitor. Mr. Sidney Perks followed, and spoke feelingly on the prevailing ignorance of the architectural profession in matters of this kind, and the unpractical methods frequently adopted in protecting the rights of their clients. Mr. W. Wonnacott followed, and briefly recited the provisions of the proposed Ancient Lights Bill, to be laid before Parliament at an early date. This Bill had been approved by the Joint Committee of Architects and Surveyors, and at present was in the hands of the Incorporated Law Society for consideration. Mr. W. Williams (visitor) gave an interesting historical *résumé* of the legislation on this subject from early times, together with some valuable hints and opinions from the solicitor's point of view. Mr. Henry Lovegrove (visitor) dwelt on the importance of reliable drawings, and the anomaly of removing wooden hoardings, erected as obstructions, from the control of District Surveyors; and gave instances where on certain estates the acquisition of rights was forbidden in the lease, as, for instance, the Crown properties, the Bedford Estate, and those of the Ecclesiastical Commissioners.

Mr. G. H. Lovegrove asked a question as to skylights and other lights not vertical; Mr. J. Hout spoke on the importance of evidence revealed by consulting the rate-books of a district; and the Chairman then called on the Special Visitor, Mr. J. Watson Moyses, who spoke at length on the legal procedure in actions, the collection of evidence, and intelligence to be displayed in working up the technical data, the apparent contradictions of the numerous legal decisions, and the poor prospects before the new Bill when introduced into Parliament on account of the interests that would be prejudiced and affected in various ways. With conviction Mr. Moyses condemned the use of such phrases as "blackmail" and "barefaced robbery." Mr. Pearson briefly replied to the vote of thanks.

THE SURVEYORS' INSTITUTION.

AN ordinary fortnightly meeting of this Institution was held on Monday at No. 12, Great George-street, Westminster, S.W., Mr. Arthur Vernon, President, in the chair.

Mr. J. W. Penfold, hon. secretary, having read the minutes of last meeting, announced some donations to the Library and the Library Fund, and a vote of thanks was accorded to the donors.

Mr. Penfold also read the following list of candidates who satisfied the examiners at the Preliminary Examination of the Institution, held concurrently in London, Manchester, and Dublin, on January 14 and 15:—

O. H. Baker, Poole; A. P. Baldwin, Edgbaston, Birmingham; F. L. Ball, Southsea; R. A. Balls, Clapham Park, S.W.; M. D. Bannister, Hayward's Heath; A. W. Bentley, Regents Park, N.W.; S. W. Bettridge, Tonbridge; L. G. Blomfield, Wimborne Minster, Dorset; B. Bradley, junior, Fladbury, near Pershore; J. S. Bray, Ogbeare, near Tamerton, Holsworthy; K. V. Brierley, Fulwood, Preston; W. G. C. Britten, Haltwhistle; H. I. Brown, Tottenham, N.; J. E. Brown, Bilbrough Lodge, near York; H. S. Bryant, West Horsham; L. T. Burnett, Amhurst Park, Stamford-hill, N.; C. J. F. Burr, Willesden Green, N.W.; A. C. Burstal, Wimbledon; D. C. Castell, Putney Hill; E. P. Caton, Shefford; R. G. B. Chase, Edgbaston; M. Clapham, Grimsby; W. H. B. Coates, Streatham, S.W.; D. H. Cox, Finchley, N.; H. A. Coxon, Surbiton; A. H. Davis, Kensington Park-gardens, W.; A. G. Eastman, Beckenham; J. L. Easton, Eastbourne; B. S. Egerton, Chislehurst; C. E. Ellis, Bush Hill Park, Enfield; H. H. Ewin, East Ham; G. E. Falkner, Brooklands, near Manchester; P. Fitch, Highbury New Park, N.; R. D. L. Ford, Croydon; S. J. Fox, Crouch Hill, N.; A. S. France, Streatham Hill; F. A. George, Chiswick, W.; F. S. Gibson, Clapham, S.W.; S. L. C. Gilks, Putney, S.W.; A. F. Glover, Leeds; J. Goldberg, Gravesend; C. H. Gregory, Leytonstone; A. E. Grundy, Leicester; E. L. Gruning, Holland Park, W.; F. V. Hallam, Blackheath, S.W.; C. P. Harrington, Clapham Park, S.W.; P. L. C. Haslam, Bolton; R. W. Hawke, New Barnet; J. D. W. Hayton, Highgate, N.; A. L. Hayward; Ramsgate; L. S. Hodgson, Finsbury Park, N.; R. E. Hookey, Streatham, S.W.; J. H. House, Monmouth; H. F. Hurcomb, Oxford; W. A. Jennings, Stratford, E.; F. F. Kendzior, Purley; H. J. Klosz, Hampstead, N.W.; T. H. R. Lavington, Marlborough; F. C. Loads, Morpeth; J. A. Loram, Pinhoe, near Exeter; F. W. Lord, Rochdale; C. Markhams, Culver, Sutton; R. H. Mills, Horsham; T. H. Moore, Tewkesbury; G. L. Nash, Hampstead; H. N. Nash, Swansea; G. Neame, Middleton Stoney, Bicester; C. F. Norman, Lee, S.W.; G. P. Nuttall, Bury; H. E. Ord, Sunderland; H. Page, Cheshunt; C. D. Palmer, Norwich; O. E. Parratt, Balham, S.W.; C. B. Parsons, Exeter; E. A. Payne, Southsea; S. B. Perkins, East Stonehouse; F. Peter, Berkeley; A. R. Petrie, Hadley, Barnet; J. R. Price, Elworth, Sandbach; D. P. Pritchard, Sparkbrook, Birmingham; S. A. Ratcliff, Grosvenor-square, W.; H. S. Relton, South Croydon; G. Richardson, Hunslet; E. G. Righton, Evesham; L. H. Rodwell, Bury St. Edmunds; H. E. Rowland, Aylesbury; W. J. W. Rowland, West Milton; G. B. Rowlands, Newton; H. G. Royston, East Finchley, N.; G. R. Russell, Herne Hill, S.E.; J. T. Ryde, Woking; D. B. Sceats, Great Ormond-street, W.C.; H. L. Small,* Gigley, near Whitney; H. F. G. Smith, Southampton; H. Stevenson, Coventry; E. D. Symes, Newport Pagnell; J. F. Tallon, Chester; H. Thorne, Newport, Barnstaple; J. W. Trodd, Ryde, Isle of Wight; H. T. Ward, Leek; J. E. Ward, Bolton; N. B. Watson, Low Fell, Gateshead; J. D. Weguelin, Hove; R. S. White, near Stonehouse; G. M. Winder, Exeter; E. Winfield, Amersham; G. F. H. Wraight, Tunbridge Wells; E. H. Wright, Plumstead, S.E.

Rural Drainage and Sewage Disposal.

The discussion was then resumed on Mr. H. T. Scoble's paper, read at the last meeting,† on "Rural Drainage and Sewage Disposal."

The Chairman said that if any one wished to become a benefactor of the human race, a good opportunity was to be found in the need for the purification of our water supplies and the profitable disposal and use of our waste materials. He would call on Professor Robinson to resume the discussion on Mr. Scoble's paper.

Professor Henry Robinson said that as to drains, besides their ventilation, their testing was of the utmost importance. Last year there were two very well-known cases where an effort was made to establish the idea that old drains should not be subjected to the water test. Last year he was engaged in two cases of artisans' dwellings. In one case the drains stood the test; in another they did not, and it was still a subject of litigation whether those drains should be subjected to the water test or not. It was an important matter in rural districts especially, and he put it on record that in his opinion all house drains should stand the water test. Practically, the main point of the paper was as to what might be called the "conservancy" system of dealing with the refuse of a house and the "water carriage" system. He was strongly of opinion that the water carriage system is the one which will prevail. He thought so, not because the conservancy system—either the dry earth closet or the midden or pail—was not capable of being carried out successfully if it had the supervision which Dr. Poore advocated, and which, in Dr. Poore's work at Andover, it received. But in practice he had seen so frequently the misfortunes attendant on reliance on the conservancy system, whereas the water-carriage system, if properly carried out, enabled the refuse of a house to be carried away promptly and got rid of. By the conservancy system, however carefully they scavenged and disposed of the refuse, there were risks. Wherever he had had to do with drainage of small or large communities he had found that the water-carriage system tended more to the health of the community than the other. If the refuse of a house went into a cesspit and it was used by being spread upon a garden, there was bound to be a risk. In practice that meant that the environments of a house were subject to pollution, and that was not the case with the water-carriage system. As to Sir William Crooke's remarks that some 16,000,000*l.* worth of fixed nitrogen was annually lost to agriculture by the reckless discharge of sewage into rivers and the sea, though they might get a bigger wheat crop by utilising that fixed nitrogen, would they not get bigger bills of illness and larger taxes? It was a visionary matter, quite outside the range of practical engineering. He had interested himself in a case where the conservancy system was proposed as an alternative to the sewerage of a large town, and he made a calculation of the amount of dry earth required to be brought into the town, the number of carts, &c., required for the purpose, and he found that the idea was visionary and impracticable. As to the Report of the Royal Commission of 1865, their conclusion was, practically, that the right way to dispose of town sewage was to apply it continuously to land, and that dictum was the cause of a great deal of expense and of a great deal of land being used for the purpose of sewage disposal when the conditions were unfavourable. The Local Government Board insisted on one acre of land per thousand people for the treatment of effluents. He would say that if an acre of clay land was required it was obvious that a much less area of porous land would do. A Report of the present Royal Commission stated that there were cases in which the Local Government Board would be justified in modifying, under proper safeguards, the present rule as to the application of sewage to land, but what the safeguards were was not made clear. And it was stated that each case must be considered on its merits! Was not that what they were doing all their lives? They had to vary the treatment as to sewage disposal of towns according to the conditions which prevailed. The methods of dealing with sewage by chemical or bacterial treatment were just as capable, under proper advice, of being used with advantage at the present time as ever, provided there was no fixed rule put forward in each case. We do not want it laid down as a matter of dogma that we must have bacterial treatment, any more than we wanted the rule about an acre of land to a thousand of the population. Each case must be treated on its merits by independent advice, free from personal interests. In his own practice he had to deal with sewage bacterially, and he had endeavoured to use the best known systems. He presided over a conference in 1901 on the pollution of rivers, and he said then, with a view of ascertaining whether the aërobic purification of foul fluid could be better accomplished by what is known as the "contact" system or by trickling:—"When sufficient land is not available, or where it is unsuitable for sewage disposal, then the further treatment of the liquid in aërobic beds enables any required standard of effluent to be attained. Inasmuch as the purification of foul fluid by aërobic action is dependent on aëration, it would appear best to subject the fluid constantly to exposure to the air. This would be better effected when the liquid trickles over open surfaces of hard stone, clinker, or other material in the aërobic beds than would be the case were the bed worked on the intermittent system, viz., first filled, then emptied, and then left to rest. I am aware that difference of opinion exists on this point, and prefer to keep an open mind on the subject at present." The trickling system he had carried out with great success, and he had done the same with the contact system. Some large towns were rushed hastily into the adoption of one system or another, but he advocated proceeding cautiously, whether for large or small towns, and he felt that where some system was put forward vehemently there was some personal interest to be served. Sewage was a nuisance to be got rid of at the least expense to the community and with the best sanitary results, and each case must be governed by its own conditions.

Mr. H. Alfred Roechling said the author had presented them with a very interesting paper, but while he agreed with many of the premises, he failed to discover between them and the conclusions that strong tie which made conclusions irresistible. On the contrary, he felt the author's conclusions must fall to the ground when critically examined. He agreed with the author in his remarks on Dr. Poore's system, which went to show the great value of land as a purifier of excrementitious matter; he sympathised with the author in his lament as to the waste in manurial value of sewage passing into rivers and streams; he agreed with the author in thinking that the food cycle was affected in allowing that waste to continue, but the author did not carry

* Passed at head of list.

† See our issue for January 17 for report of the meeting.

those views to their logical conclusion and suggest the direct application of the sewage to the land. He suggested instead the interposition between the sewage and the land of an intermediary treatment—a treatment elaborate and expensive—and only after that treatment the application of the effluent to the land. As to Conclusions 1 and 2 of the First Report of the present Royal Commission, Conclusion 1 dealt with land treatment. The Commission did not inquire whether the land treatment was a correct principle, but only whether some kinds of land were unsuitable for sewage purification. It was perfectly clear that they were quite satisfied with the general principle, and only wished to get some information as to some forms of its application. What was their verdict? "We doubt," they said, "if any land is entirely useless;" but in the case of stiff clay and peat lands the power to purify sewage seems to depend on the depth of the top soil. But even as to peat and clay there were facts to show that such land was used. Manchester disposes of a large part of its night soil on a heavy peat bog at Carrington Moss, and a portion of the Reading farm was on a peat soil. There were also sewage farms on stiff clay soils which had given good results. In Conclusion 2 the Commissioners dealt with artificial processes, and stated that an effluent could be produced by artificial processes which, according to ordinary chemical standards, could be classed as good, and they were of opinion "that there are cases in which the Local Government Board would be justified in modifying, under proper safeguards, the present rule as regards the application of sewage to land." They did not say that the rule should be abandoned altogether in every case, but that it could be modified under proper safeguards in some cases. On the other hand, he might say that nearly all independent observers had come to the conclusion that an effluent by artificial processes was bacteriologically raw sewage. Any other conclusion to any one acquainted with the nature of these processes would appear out of the question. How, then, could we get rid of the pathogenic germs in the effluent and in the sewage? The answer was supplied by the second report of the Royal Commission, where it was stated that land and artificial filters had the power of removing these germs. The report also stated that in some cases the effluent by land treatment did not come up to the standard required; but that did not prove that land had not the power of removing the germs, but that in some cases it left something to be desired. It seemed evident that land and other efficient means of filtration had the power of removing typhoid bacillus. On some of the sewage farms abroad—in Paris, for instance—the effluent water was so pure that it was drunk in preference to other sources of supply, and had been drunk in preference for many years. We know that pathogenic germs were in the crude sewage, and that the typhoid bacillus could live for fifteen days in a stream, but, in spite of that, the author said we could treat that as a negligible quantity. Ought we to do so? He should say, certainly not. All engineers had a factor of safety in their works, and should it go forth that in sanitary matters there was no need of such a factor? The victims from mechanical accidents were few as compared with those from sanitary accidents. If it was necessary to purify sewage at all—and he did not suppose any one would doubt that—it was absolutely necessary to rid it of its most dangerous constituents, and that could easily be done by pouring it over the land. The author's conclusion was: employ the bacterial treatment, and then use the effluent on the land; but the author had shown no necessity whatever for this intermediate elaborate treatment, which left the effluent bacterially in its crude condition. Land would do all that bacterial processes can do, and, in addition, it would remove the pathogenic germs, utilise a great part of the manurial elements contained in the sewage, and greatly reduce the quantity of the effluent. We could do away with the intermediate process. He thought it absurd to say that because the land treatment had failed in certain cases the principle was at fault. Accidents would sometimes happen, and a septic tank at Walton-on-Naze blew up the other day. Was it against common sense to place that system which gave the greatest benefits over a system that gave the least?

Mr. A. R. Stenning said he was anxious to learn more about the disposal of rural sewage, for he was much interested in that and also in rural water supply. The two subjects, he thought, must go together. What was the best way to deal with excreta and sullage water in a village where the cottages were dispersed? Sometimes outlying districts were made to have some scheme of water supply or drainage, and if one was provided the other must follow, and it would be useful to hear from the author what he advised as to that. Water was a difficulty to deal with, and some districts had to put up with indifferent supplies, and the great difficulty was to provide good water If they had water laid on to the house, what were they to do with the excreta and sullage water? It was not so much the excreta as the sullage water, for nothing was better than mother earth for the disposal of excreta; but the difficulty was the sink waste, and that, mixed with the excreta, caused the difficulty of disposal. He would like the author to tell them how to deal with the sewage of a village community of, say, 300 people.

Dr. G. V. Poore said he was asked by the Royal Commission whether his system had been adopted by any District or Parish Council, and he said, "No, and never will be in the present state of the law." He put it to them that the great spur towards the sewage of rural districts was not so much sanitation as building. Wherever the sewer went, the way was prepared for the jerry-builder, who followed, and the consequence was that it was to the interest of many people to have a sewer. The labouring man, who was often a compound householder, and was never brought face to face with the rate collector, naturally voted for the sewer, for it meant wages—he (the speaker) should do the same thing himself in the same circumstances, for we all acted according to self-interest; the little shop-keeper saw that the borrowing of a large sum of money and the advent of the contractor and his merry men would bring more customers, and he also voted for it; and the man who happened to have stray little parcels of land by the side of the road where the pipes would go, he also voted for it; and then one saw those eligible sites to let and the owners made a lot of money. But there were a residuum who did not make any money, and the difficulty was to adjust the burden of rates equitably. The compound householder did not think of the future—he voted for the sewer and he got a temporary advantage—and he did not see that his house and the houses of the labouring classes generally was going to be dearer in the future, practically for ever, because of his reckless extravagance. The rates went up and the poor man's house was heavily rated, and the great reason why there was this great difficulty of housing the working classes was the increase in the rates and the increased cost of houses. He was doubtful whether, from the point of view of economy, sewers ought to be paid for out of loans, and for this reason: "You raise a loan and expect to pay some of the money back by earning something. A sewer never earnt a halfpenny in this world. A sewer, and what is called a sewage system, is a financial cormorant; its mouth is always open, and it will swallow money for ever and ever. The sewer has done more to plunge the municipalities of this country into debt than any other single factor. The conduct of the municipal people is, to say the least, reckless." He had just given up a house in the Thames Valley. When he went there the rates were 4s. 2d., and the authorities had just borrowed money for their sewers. They began by borrowing 77,000*l.*; they had in the last ten years borrowed 133,000*l.* When he left the rates were 8s. 2d., and the authorities were at their wit's end to know what to do with their sewage, and were serving notices right and left to join on to send your sewage to their farm. They had literally manufactured a filthy quagmire in the middle of the place, which would go far to destroy its value. It should be remembered that once upon a time there was malaria in this country, and he thought we should get a sewage mosquito. In the place he alluded to, people had been bitten by insects, supposed to be flies from this sewage marsh, and they had had bad sores as a result. It was a question of dissemination of contagia. It was not safe, even, to put sewage into the tideway of a river. We treated our sewage; we strained it and made it better to look at, but there was no doubt that the bacteria were there and there was danger of filters overrunning and the liquid going into the streams. Although the sewage was treated, the amount that was sent into rivers and down the coast had increased enormously, and unless we mended our ways and showed some consideration for our neighbours, he did not think it would be safe to send our children to the seaside. Who was going to send a child to paddle about in water which poisoned the oysters? The biological processes had shown that there was something in the old methods. What was an anærobic tank? It was a cesspool, nothing more or less. Call it by any name, and it would smell as much. When the cesspool was emptied, it used to be a matter of surprise that there was not half the stuff one expected to find, and that was an observation as old as the hills. Why should we not in a village have the thing done piecemeal, and also have an equitable adjustment of the rates? In the Thames Valley during the thirteen years he was there he had not troubled the municipality with a single drop of foul water or with any excrement—and the sanitary cart never called at his house; but he had to pay the rates like any one else; and instead of it being said, "You give us no trouble, you shall be released of your rates," they said, "He pays his rates, why does he bother his head about the sewage?" The average person did not care. He (the speaker) had not fathomed how an equitable adjustment of rates could be brought about, but there was one thing perfectly clear, and that was that one charge for the payment of sewer rates should be a tax upon water-closets. Every water-closet should pay 1*l.* per annum, and what there remained to pay should come out of the general rate. If something like that were done the sewage difficulty would be greatly simplified. His little work at Andover had been entirely successful. For nearly twenty years he had dealt with the sewage or excrement of 100 people, and there had never been any diphtheria, and the health of the cottagers had been very good, although the cottages, to start with, had been old. The thing was not what he desired; but if one began *de novo*, it would be possible to improve on it. He had shown that the way to dispose of sewage was to bury it just below the surface, and that had been done from the time of Adam, though it had, like other things, been forgotten. The old idea was to bury the excrement deep. He also claimed to have proved that, if they acted properly, they could put the sewage as near the house as they chose; his own garden was not more than a few hundred yards from the cottages, and the place was in the very centre of the town. One could go into the garden directly after scavenging, and neither eye or nose could detect anything objectionable. The place was also of great beauty. He also had proved that there was no need to let manure lay in a heap to ripen. If they buried it at once and planted cabbages (for nothing else would do as a first crop) they got a crop of cabbages while the manure was ripening, and after the cabbages they got any crop they chose. If they put the stuff on the top of the soil, it was all oxidised, and he was sure excrement could not be washed downwards into the soil by rain; the harder it rained, the more the excreta got locked up in what became something like pudding crust. Why could what he had done not be done by other people? He did not know. The proper disposal of excreta was one of the first things that should be taught a child at school. If the proper thing were done, his system could be made to pay, as it had paid at Andover.

Mr. G. Beken said he did not agree that sewage ought to be regarded as a nuisance: we should take a more optimistic view of the matter, especially when we remembered Sir W. Crookes's estimates, already quoted. He did not know how Dr. Poore disposed of the sullage water; that seemed to be the great difficulty in connexion with drainage in country districts. It had occurred to him that if clay and peat lands were unsuitable for sewage treatment other soil might be added to them in order to make them suitable. In these days of motors and light railways, soil could be brought to mix with clay so as to make it porous or more workable; and in the case of peat, a more clayey soil could be brought and mixed with it.

Mr. C. John Mann said as to Professor Robinson's remarks about testing drains, he did not think any member of that Institution would think of passing drains unless they would stand the water test. There was no cut-and-dried

system for the treatment of sewage, but it always seemed to him that the best thing was to take it to the land as soon as possible, but in many districts this was difficult to do; the bacterial treatment certainly did facilitate the flow of sewage, and it was a tempting method to fly to. He agreed with what Dr. Poore said as to putting excreta just beneath the earth. It was difficult to carry out such a system, however. [Dr. Poore: No.] He had lived in a house with nothing but the earth system, because he was a great believer in it, and he believed it would be possible to deal with excreta in that way if children were taught to understand it from the beginning; but as things were, the system was not practicable without a very earnest effort to make it so. He had tried in many ways to make it practicable, but he had found many difficulties where people were determined to make it a failure. If people wanted to make the system a success they could; but there was so much prejudice, especially in favour of the water carriage system, which system carried things out of sight and so seemed to end matters without trouble. He should have thought that some satisfactory system would before this have been discovered by which the septic tank could be used and the matter afterwards put on the land so as to use all the valuable products on the land.

After a few remarks by Mr. E. W. Booth as to automatic gear and valves,

Mr. A. J. Martin said that the principal question raised by Mr. Scoble was whether anything had been done to reduce the burden caused by sewage disposal in small communities. While the cost of such work remained prohibitive the result would be detrimental to the community. While one could not fail to have the highest respect for the work Dr. Poore had done in demonstrating the possibility of dealing with fæcal matter in upper layers of the earth, we had to recognise the fact that the water-carriage system was the one we have to work with at the present time. He did not think that any sane advocate of the bacterial systems would deny the possibility of dealing with sewage on land, but what they had to look at was what had been done. He thought it was unfair of Mr. Roechling to say that the instances of failures of sewage farms were of exceptional cases. There had been an attempt to create something like a panic in regard to bacterial methods and the escape of pathogenic germs, but the well-thought-out opinions of those who gave evidence before the Royal Commission should be read. As to the requirements of the Local Government Board as to land, they were a hardship to such towns as Manchester and Leeds, but not to the village communities, where land was cheap. But while the cost of land might be a small matter, the indirect consequences of the Local Government rule might involve the provision of a pumping station, which was an abomination and danger, besides adding greatly to the cost. Another important point was as to storm water; no matter how carefully they excluded from the sewer every drop of storm water, they were compelled to lay down a storm filter for dealing with three or four times the storm-water flow. The Institution might with advantage memorialise the Local Government Board to remove that requirement in cases in which the Board were satisfied that proper precautions had been taken to exclude storm water from the sewers. As to the standard of purity of effluents, seeing what a small volume of sewage some works had to deal with, it would be reasonable for the Local Government Board to be content with a less degree of purification in the case of works for village sewage disposal than is called for in the case of large towns discharging 10,000 times the volume of sewage.

Mr. Scoble, in the course of his reply to some of the remarks made during the discussion, said that as to Professor Robinson's remarks, it did not matter whether the purification were effected by contact beds or trickling beds; both were successful. Mr. Roechling seemed to think that the land treatment was the only way of treating sewage; but land had been tried and land had failed. At Leicester, for instance, they had had a large sewage farm and it had not been efficient, and an endeavour was now being made there to adopt the bacterial treatment. Mr. Mawbey, the Borough Engineer, had been carrying out a number of experiments, and he (the speaker) believed he had reported definitely in favour of bacterial treatment. Leicester was an instance where it had been found that the purification was not sufficient on land, and the expense was enormous. As to what he should recommend for rural drainage on a very small scale, without knowing the details it did not seem possible or wise to give any indication in favour of one system or another. The difficulty of earth disposal was, to a great extent, the sink waste, and the advantage of disposing of excreta in the earth could not be doubted; but the village people let things slide and did not seem to care to trouble about emptying the tins or pails. Sewage must be regarded as a nuisance, and it must be got rid of. The way to solve the question was to purify the sewage and utilise the effluent. As a community, we should never return to earth-to-earth disposal, which was not so convenient as the water-carriage system. We should have to change human nature before people would bother and go back to earth closets. As to mixing soils, as had been suggested, that would be difficult on account of expense, and a considerable amount of under draining would be necessary in order to get the effluent away. With most of Mr. Martin's views he was in agreement; the Local Government Board asked too much.

The Chairman, in putting the vote of thanks to the meeting, said that there were those present who took exception to Mr. Scoble's remarks about Leicester and the land system. The land, he understood, had been overworked, but the system had not been a failure.

The vote of thanks having been agreed to,

The Chairman announced that the next meeting will be held on February 9, when Mr. W. Woodward will read a paper entitled "Some of the Difficulties which Present Themselves to the Architect and Surveyor Practising in London."

The meeting then terminated.

COMPETITIONS.

FREE LIBRARY, WORKINGTON.—The seventy-three sets of designs in the competition for the new public library at Workington were displayed in the Edkin-street Drill Hall recently. The assessor was Mr. Sidney R. Smith, London, and he gave his award as follows:—First premiated design, Messrs. W. A. Mellon and Geo. Wittet, York; second premiated design, Messrs. Spencer W. Grant and Jas. O. Bowden, London; third premiated design, Messrs. Alfred Cox and F. D. Clapham, London; highly commended, 1, Messrs. Wills & Anderson, London; 2, Mr. H. A. Crouch, London; 3, Messrs. Hennell & Son, London. Three premiums were offered, viz., 25*l.*, 15*l.*, and 10*l.*

NEW WESLEYAN CHURCH BUILDINGS, ILKLEY.—In the competition recently decided for this scheme the plans of Messrs. Adkin & Hill, of Bradford, were placed first, those of Mr. Danby, of Leeds, and Messrs. Morley & Son, of Bradford, being second and third respectively. Messrs. Adkin & Hill have been instructed to proceed with the work.

CAPE UNIVERSITY BUILDINGS.—The Agent-General for the Cape of Good Hope, 100, Victoria-street, S.W., had been instructed to notify to competitors regarding new Cape University buildings that the time for sending in their plans, &c., was extended to the last day of February. We hear, however, that Mr. Aston Webb, the assessor, has objected to this, and the date will not be altered.

FREE LIBRARY AND TECHNICAL SCHOOL, CHADDERTON.—The following is the result of the recent open competition for Public Free Library and Technical School at Chadderton:—First, Messrs. Arthur R. Groome, A.R.I.B.A., and J. Lindsay Grant, joint architects, Manchester; second, Messrs. Woodhouse & Willoughby, Manchester; third, Mr. Richard Holt, Liverpool. The assessor was Mr. A. N. Bromley, F.R.I.B.A., Nottingham.

ABERDEEN ELECTRICITY WORKS.—New Corporation electricity works have been erected at Dee Village, under the supervision of Mr. J. A. Bell, the City Electrical Engineer. The contractors for the various works are:—Mason work, Mr. Leslie Smith; carpenter work, Mr. George Jamieson; plaster and tile works, Messrs. James Scott & Son; plumber work, Mr. Walter Simpson; slater work, Messrs. Alexander Adam & Co.; painter and glazier works, Messrs. George Donald & Sons; iron works, Messrs. Wm. M'Kinnon & Co and Messrs. James Abernethy & Co.: subway, Mr. Peter Tawse and Messrs. Sellar & Co.; and for the chimney-stack, Messrs. Gall & Walker, all of Aberdeen.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

St. George, Hanover-square.—Twenty pilasters and four oriel windows to proposed premises, St. George's-place, Knightsbridge (Mr. W. D. Caröe).—Consent.

Fulham.—Eight houses, with shops, on the eastern side of Fulham-road, Fulham, to abut also upon Munster-road (Mr. A. H. B. Ellis).—Refused.

Wandsworth.—An iron and glass shelter over the entrance to the Assembly-rooms at the Star and Garter Hotel, Lower Richmond-road, Putney (Messrs. Weatherall & Green).—Refused.

Whitechapel.—A projecting wooden shop front at the first floor level of Nos. 95 and 96, High-street, Whitechapel (Messrs. Harrington & Ley for Sir John Baker)—Refused.

Line of Frontage and Temporary Building.

Marylebone, West.†—A range of luncheon and store sheds at Lord's Cricket-ground, to abut upon St. John's Wood-road, Wellington-road, and Wellington-place, St. John's Wood, without a layer of concrete over the site of such sheds (Mr. F. E. Lacey and Mr. W. H. Slatter for the Marylebone Cricket Club).—Consent.

Width of Way and Lines of Frontage.

Southwark, West.—A deviation from the plan approved by the Council for the erection of a steel and concrete gangway across New Park-street, Southwark, to form an approach from Southwark Bridge-road to buildings on the west side of New Park-street, so far as relates to an alteration in the design of the iron railings and the fixing of the steel girder supporting the gangway at a higher level (Mr. H. Ward).—Consent.

Strand.—Buildings upon the site of Nos. 156 and 158, Regent-street, Nos. 1 to 13 (odd numbers only), inclusive, Beak-street, and Nos. 66 to 70, King-street, St. James, Westminster (Messrs. Crickmay & Sons for Messrs. Robinson & Cleaver, Limited).—Refused.

Width of Way and Construction of Building.

Southwark, West.—An additional story, constructed in iron, on No. 11, Marshalsea-road, Southwark (Messrs. Humphreys, Limited, for Messrs. J. J. Keliher & Co., Limited).—Refused.

Width of Way and Deviation from Certified Plans.

Southwark, West.—Certain deviations from the plans certified by the District Surveyor, so far as relates to the proposed erection of a stable with loft over on the site of Nos. 1 and 2, Eve's-place, Borough High-street, Southwark (Messrs. Battley, Sons, & Holness, for Mr. F. Redman).—Consent.

Strand.—Certain deviations from the plans certified by the District Surveyor, so far as relate to the proposed erection of a building on the site of Nos. 198, 199, and 200, Piccadilly, and Nos. 2, 3, 4, and 5, Church-place (Mr. R. Sawyer for Mr. J. W. Lorden).—Refused.

Height of Buildings and Projections.

Holborn.—Erection at the proposed men's lodging house, Drury-lane, Holborn, of a projecting staircase on the north side of the building, and to the erection in Drury-lane of a projecting staircase and oriel window (Mr. R. Robertson for the Housing Committee of the Council).—Consent.

Formation of Streets.

Hampstead.—That an order be issued to Mr. C. J. Bentley, sanctioning the formation or laying out of a new street for carriage traffic to lead from Glenloch-street to Glenilla-street, Haverstock Hill, Hampstead (for Mr. J. C. Hill and himself).—Agreed.

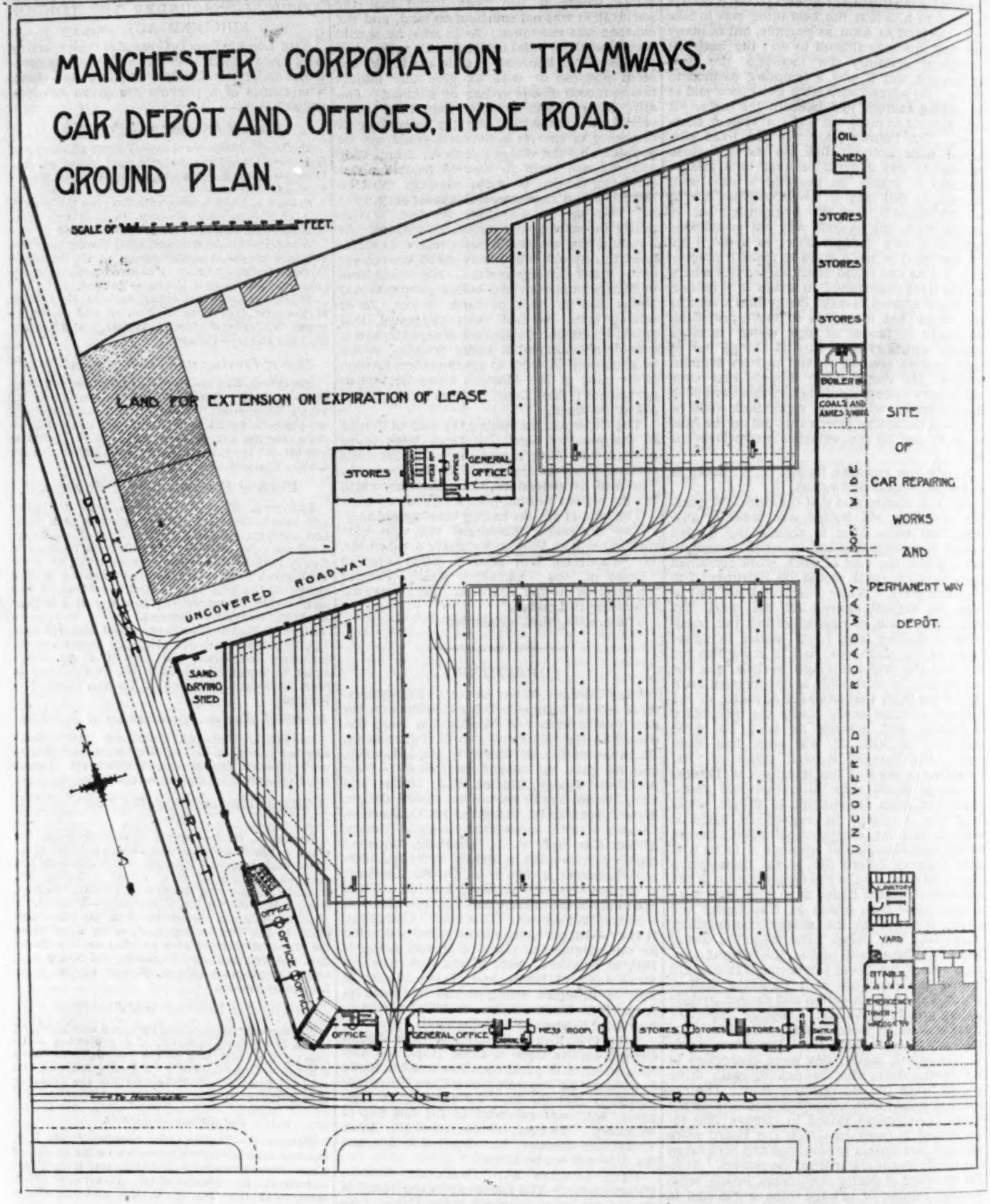
Lewisham.—That an order be issued to Mr. E. Van Putten, sanctioning the formation or laying out of a new street for foot traffic only to lead from Adelaide-road to Ivy-lane, Lewisham (for the Council of the Metropolitan Borough of Lewisham).—Agreed.

Wandsworth.—That an order be issued to Mr. W. C. Poole sanctioning the formation or laying-out of a new street for carriage traffic, to lead out of the eastern side of Alston-road, Wandsworth, to a a new street to be known as Thurso-road, and to continue eastward to a new street to be known as Rostella-road (for Mr. G. F. Darby)—Agreed.

Means of Escape at Top of High Buildings.

Westminster.—Means of escape in case of fire proposed to be provided in pursuance of Section 63 of the Act on the top story of No. 4, Whitehall-gardens, Westminster (Messrs. Aston Webb and E. J. Bell for the Crown Agents for the Colonies).—Consent.

*** *The recommendation marked † is contrary to the views of the Local Authority.*



Illustrations.

REREDOS, GRANTHAM PARISH CHURCH.

A REREDOS previously existed here, but it was considered as being too small for its place, and, although the painted subjects and figures have been retained, they have been surrounded by an oak frame and canopies on entirely different lines. The whole thing has been enlarged and placed on a "verde antique" marble base. The frame is carved with a large running pattern, the stem of which is so arranged as to form niches and canopies for kneeling angels at intervals. The insertions on either side of the central subjects have canopied niches containing angels. The oak-work is stained, and the carving and detail brought out by means of gold and colour. The wings are of green and gold tapestry hung on wrought iron rods parcel gilt. The reredos was made by Mr. R. Bridgeman, of Lichfield; the marble base and footpath, with the alabaster retable, by Messrs. Flint Brothers, of Clapham; and the decorative painting by Mr. W. O. Powell, of Lincoln.

W. J. TAPPER.

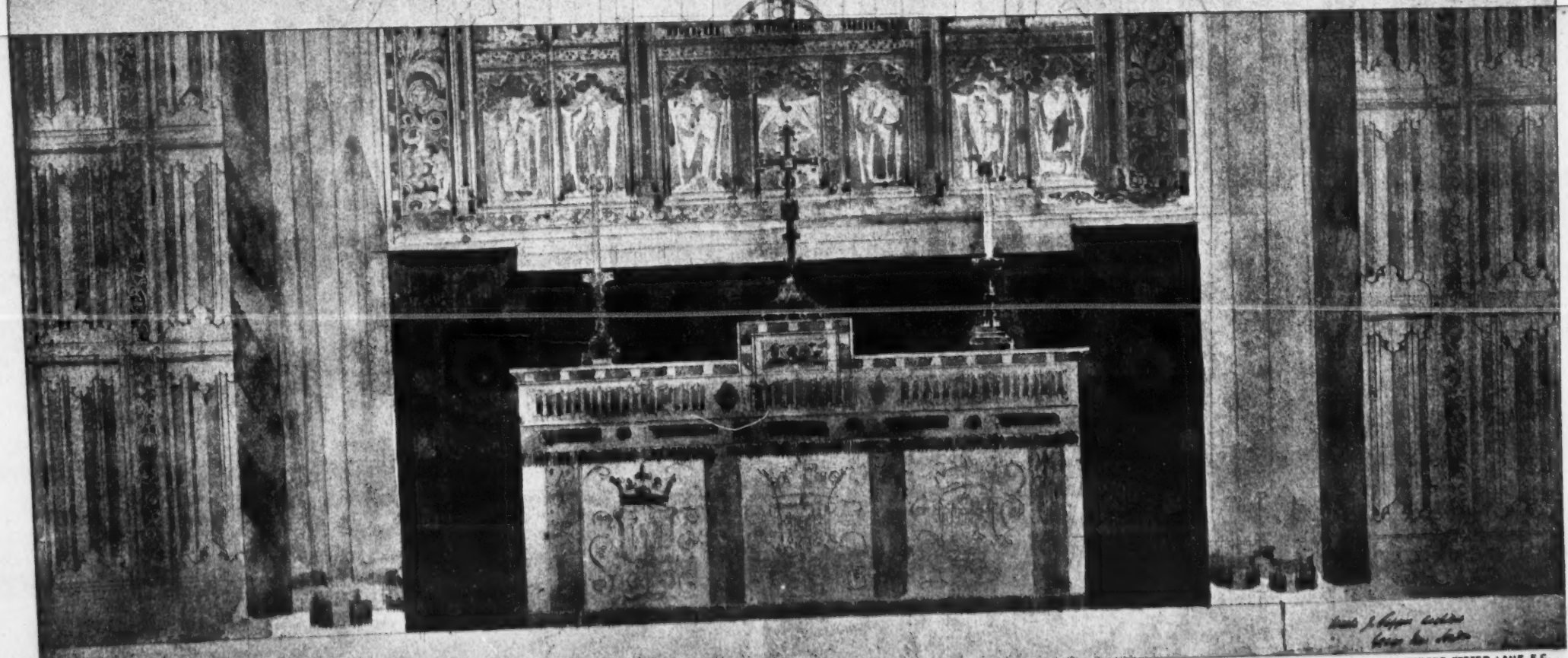
MODEL OF A PROPOSED DESIGN FOR VAUXHALL BRIDGE.

THIS model, which is exhibited in a rather out of the way corner of the Arts and Crafts Exhibition, was made in reference to the first engineer's design for Vauxhall Bridge as a proposed structure of concrete faced with granite; a scheme which is understood to be now abandoned in favour of a design with granite piers and steel spans.

One span of the engineer's design is shown above the photographs of the model. The objects proposed in the design as shown in the model were these; (1) to treat the projection of the pier as a buttress not as an immense column carrying nothing (a mistake adopted from Blackfriars Bridge, which in these matters has been the parent of ill); (2) to substitute a corbel table for the large cornice, so as to allow more apparent depth to the centre of the arch—the lines both of roadway and arch being unalterable; (3) to stop the raking lines of the span against the pier, instead of carrying them round it, keeping the pier cornices truly horizontal; (4) to give a certain degree of simple decorative treatment to the arch face, by fluting the alternate courses of voussoirs, so as to give the impression of it being a revêtement and not the real construction; and (5) to design the plinth with a receding instead of a projecting moulding, so as to present nothing under which a boat's prow or gunwale can be caught; a matter of some practical importance which engineers who are unused

GRANTHAM PARISH CHURCH

REREDOS



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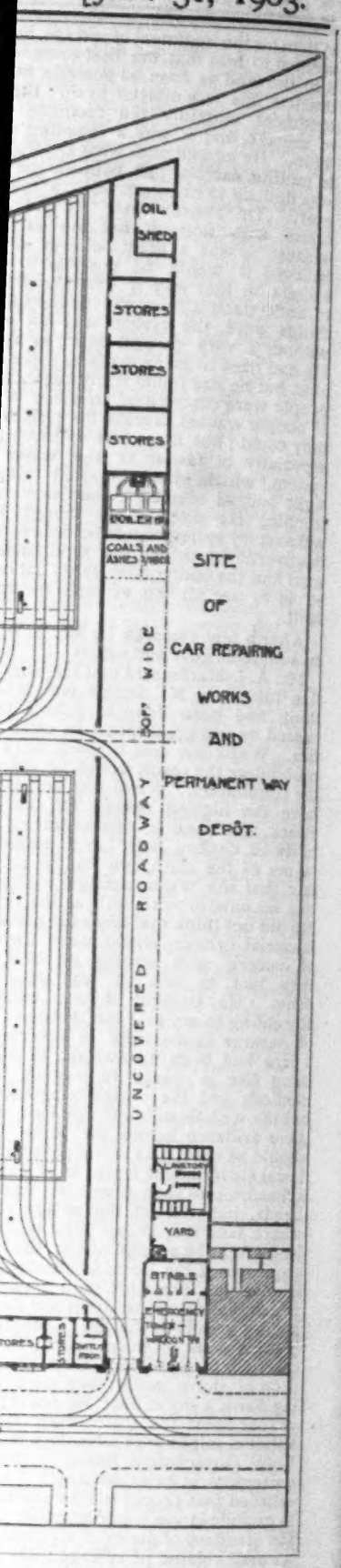

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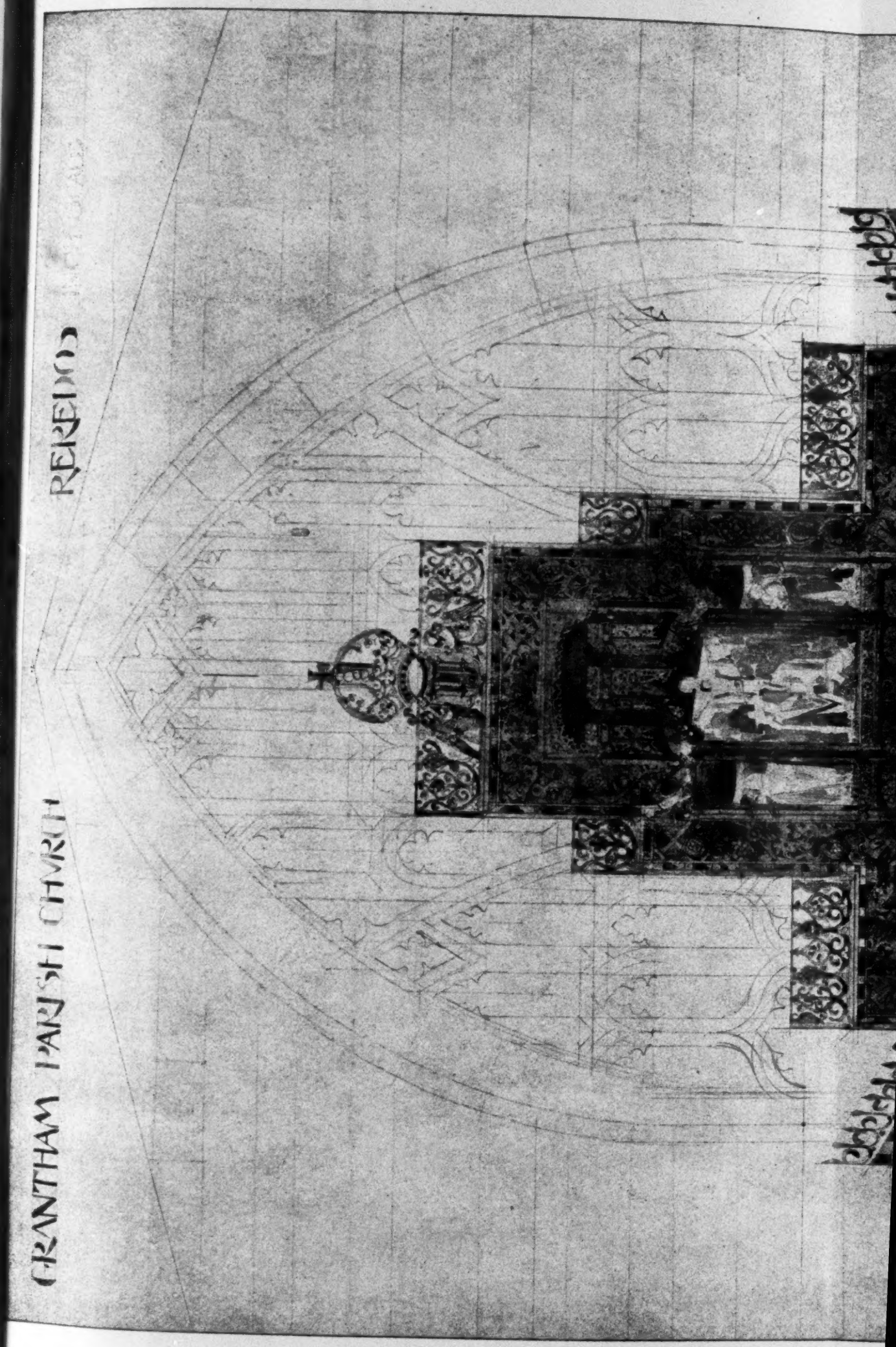

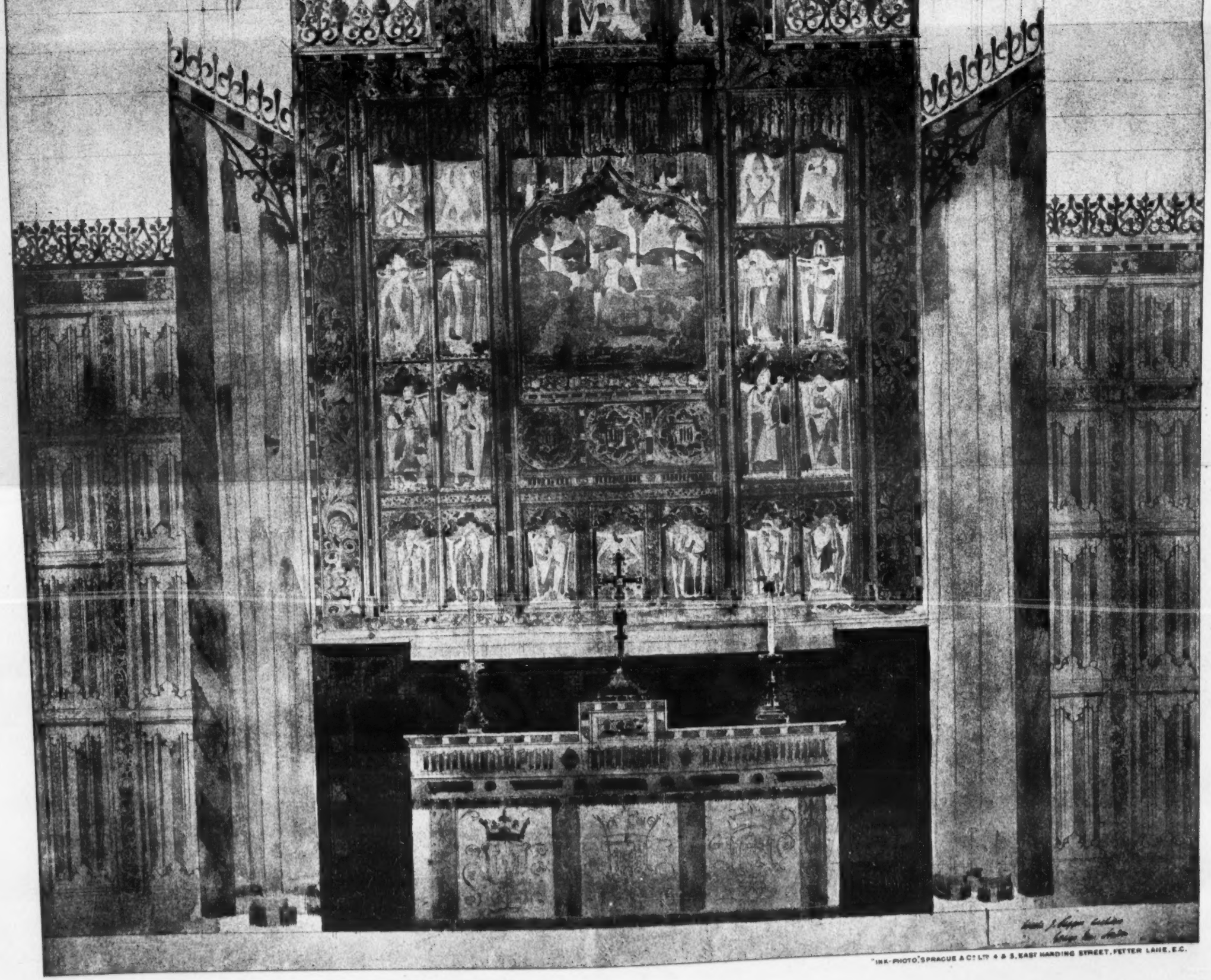

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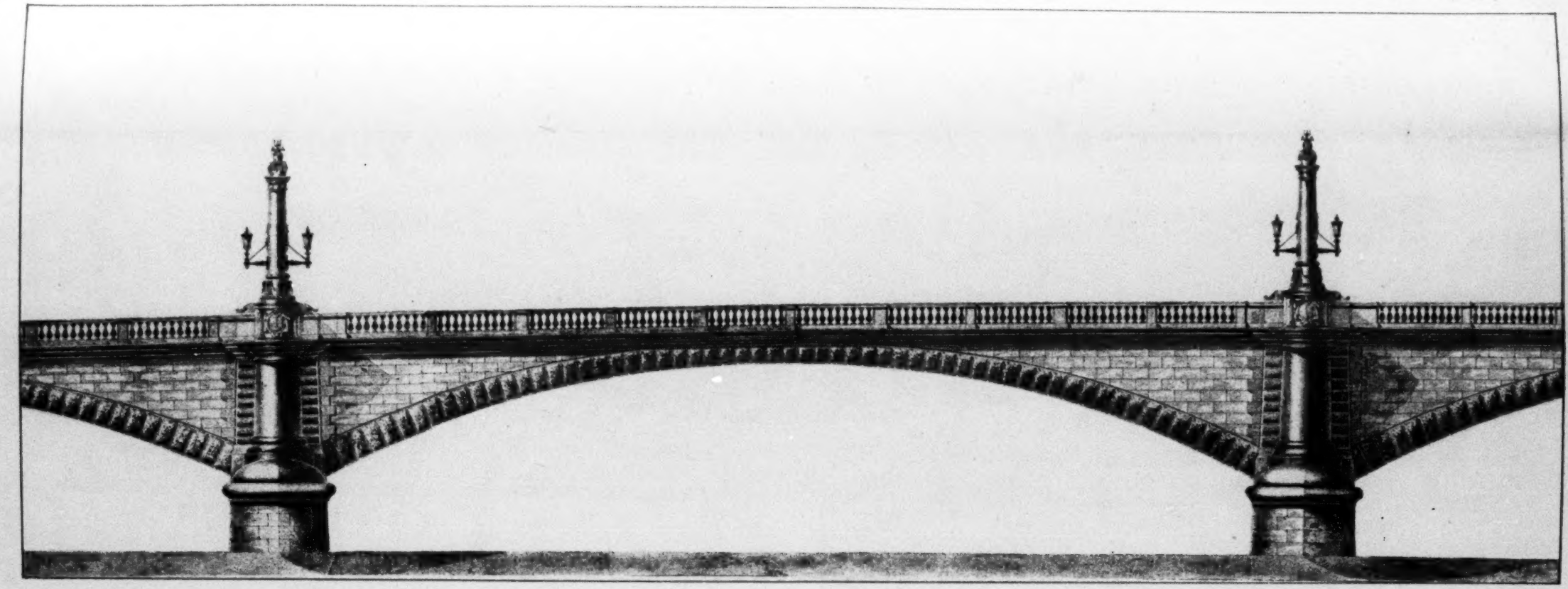
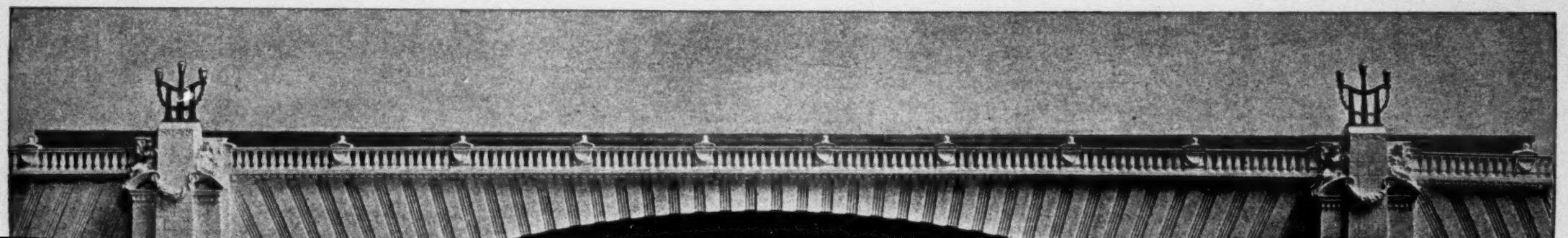
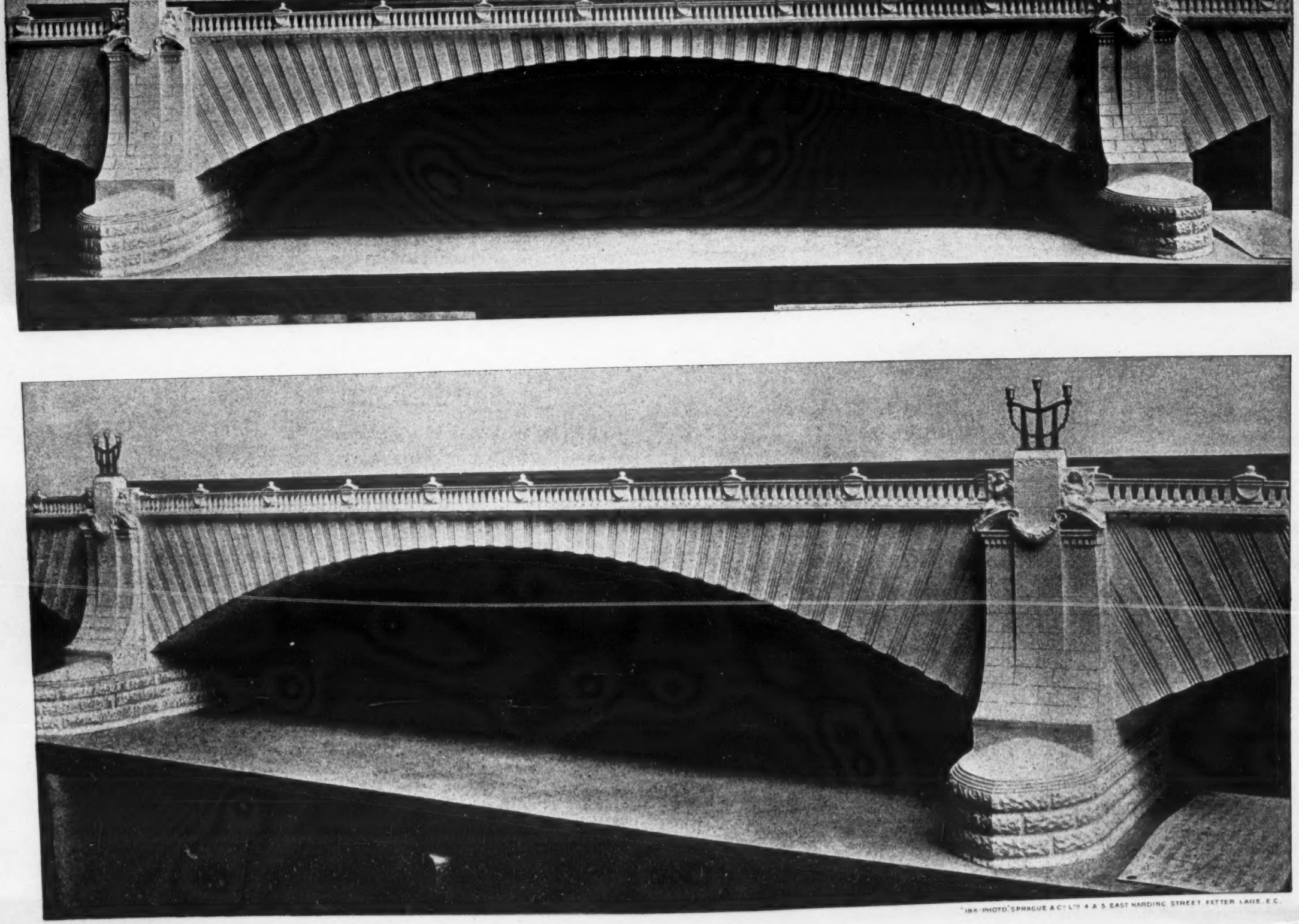


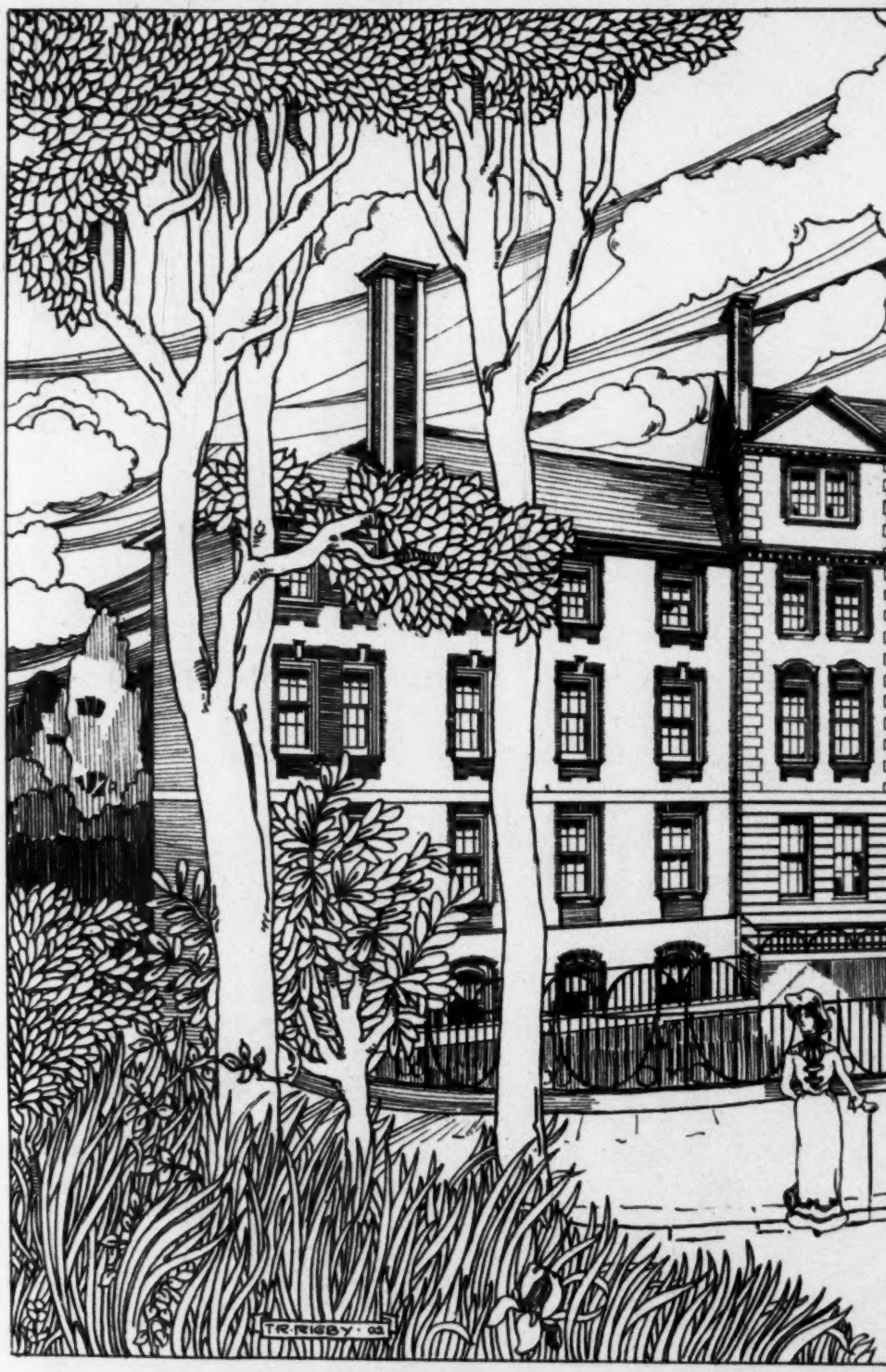
ONE SPAN OF ORIGINAL DESIGN BY THE L.C.C. ENGINEER FOR THE SAME BRIDGE.

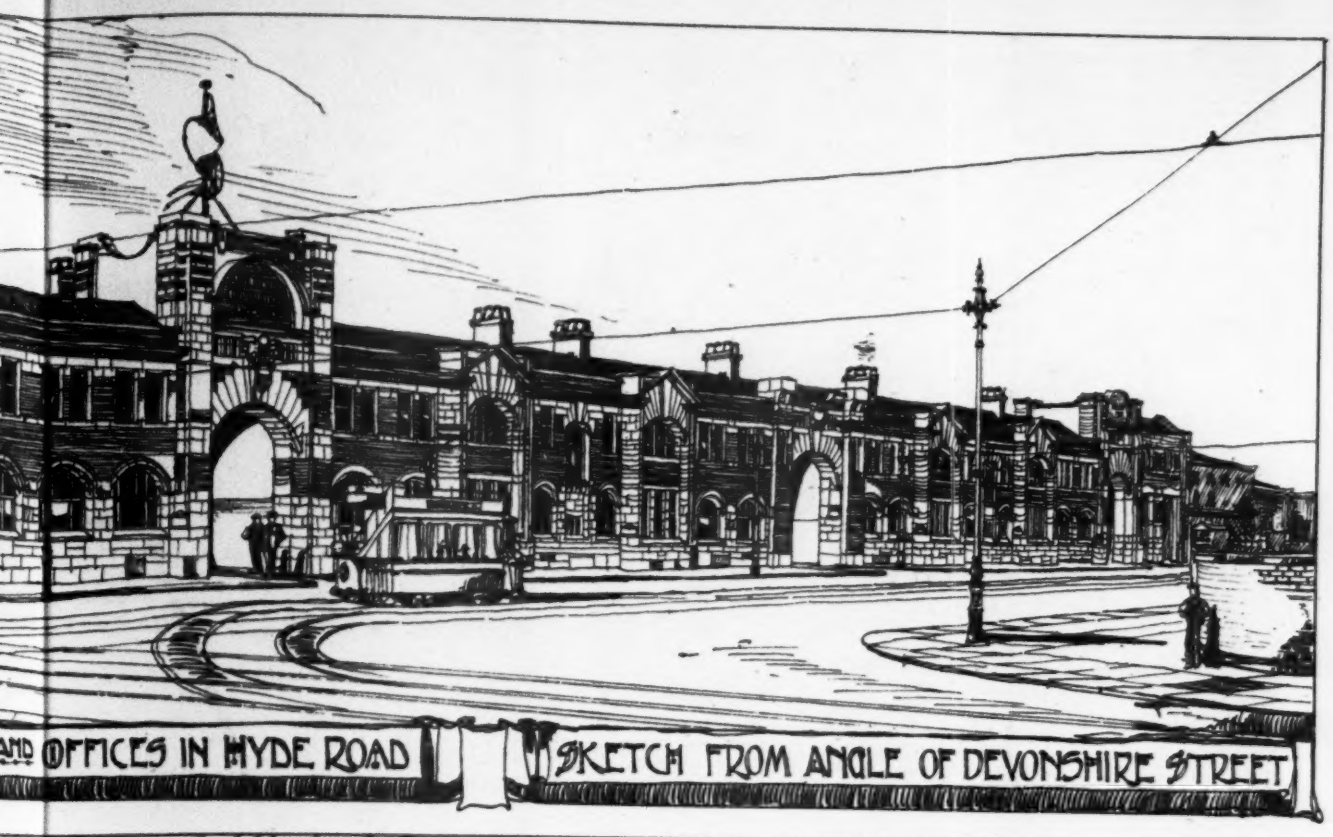




MODEL OF PROPOSED TREATMENT OF VAUXHALL BRIDGE, AS A CONCRETE BRIDGE FACED WITH GRANITE.
By Mr. H. H. Statham, F.R.I.B.A.
(on view at the Arts and Crafts Exhibition.)

MANCHESTER CORPORATION TRAMWAYS
NEW CAR SHED AND OFFIC


HAMPSTEAD HOSPITAL
T.R. RIGBY · 03



AND OFFICES IN HYDE ROAD

SKETCH FROM ANGLE OF DEVONSHIRE STREET

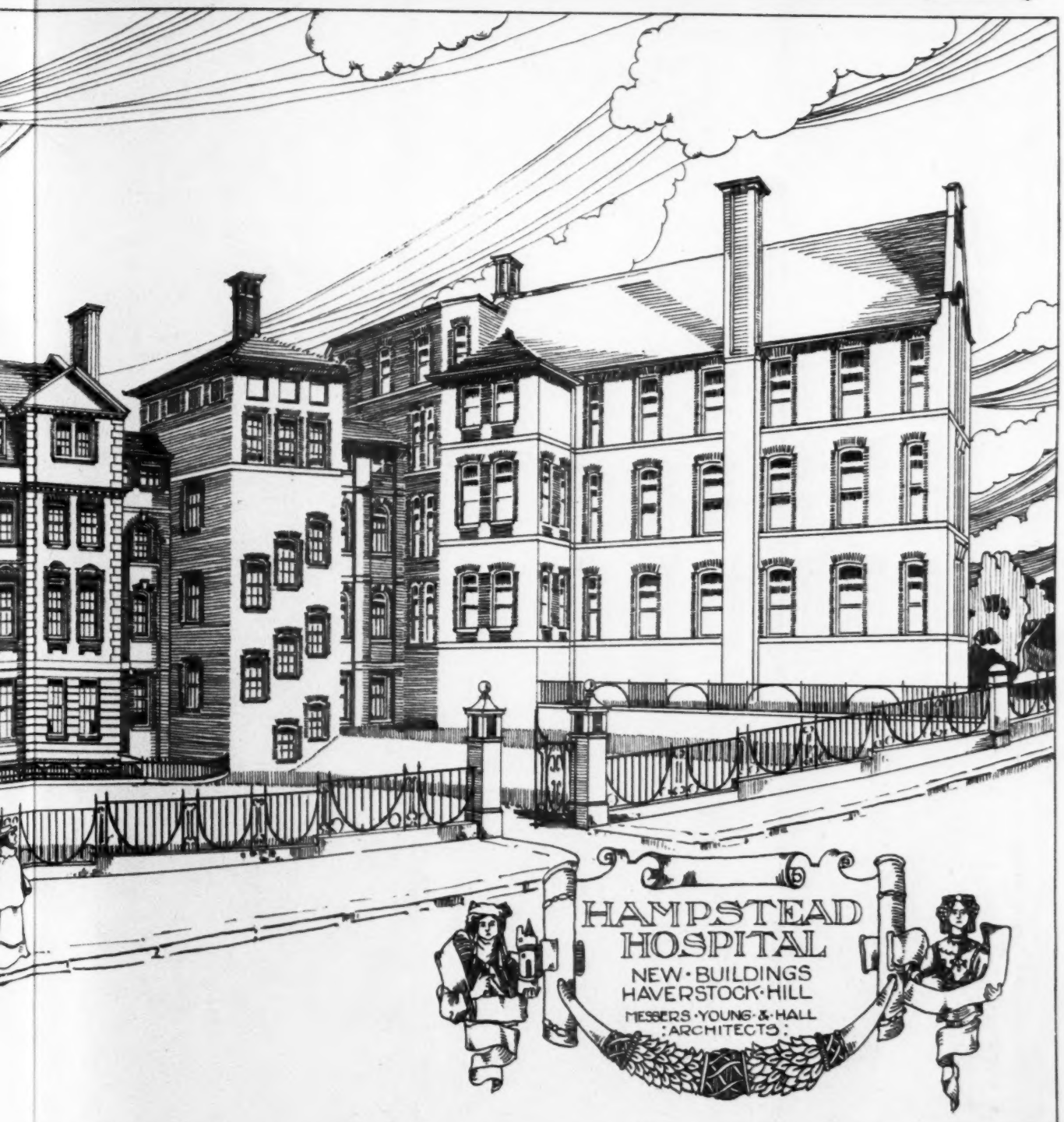
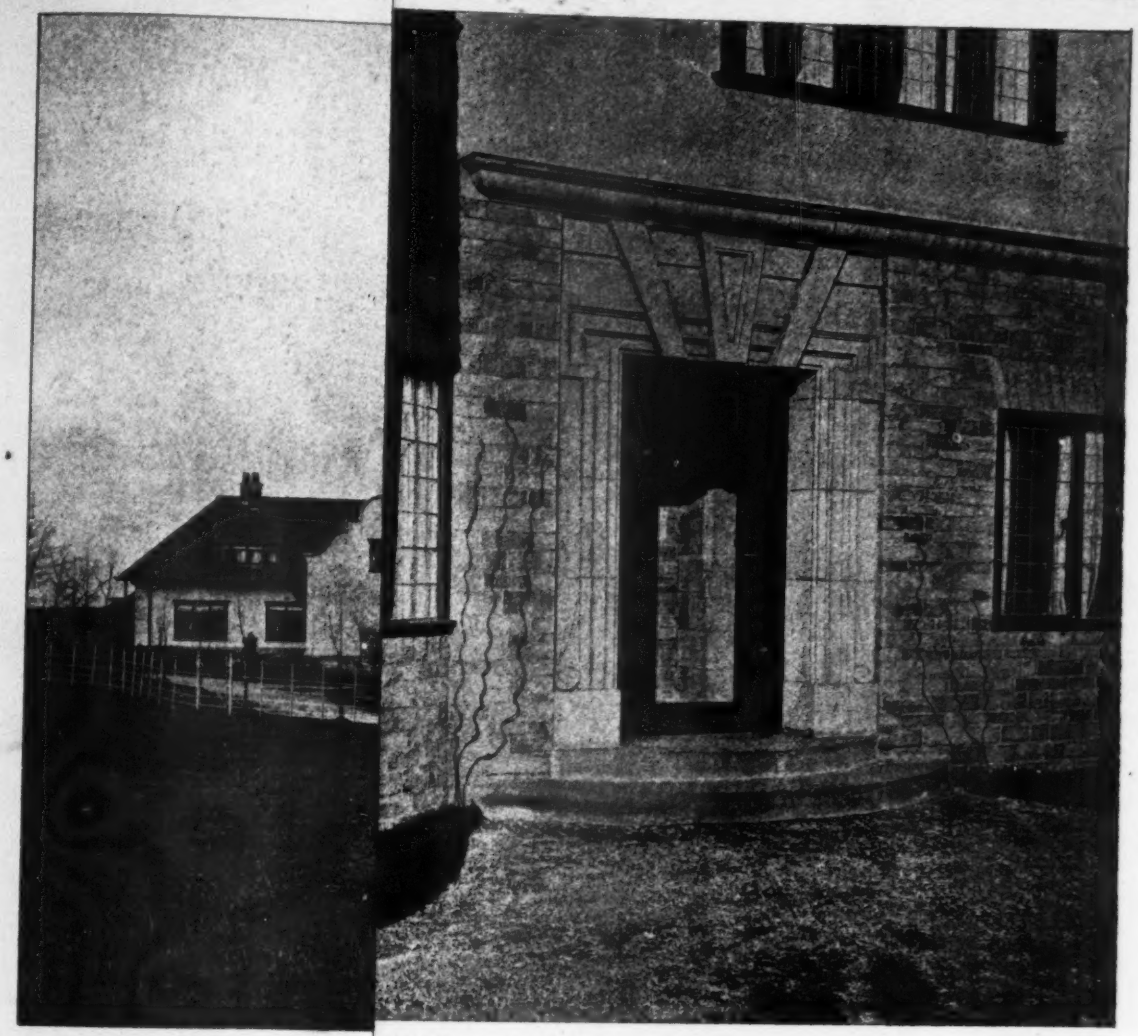


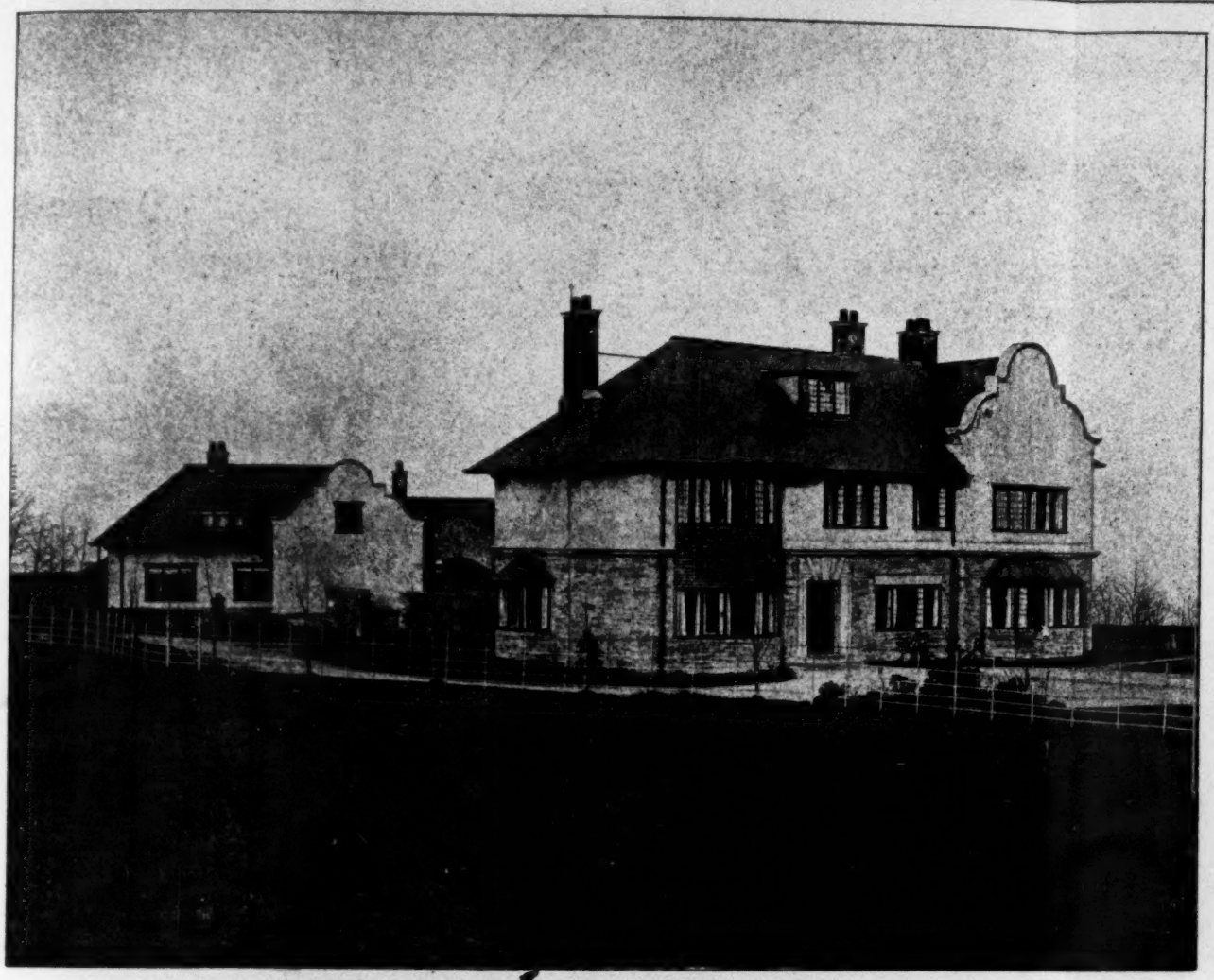
PHOTO LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.



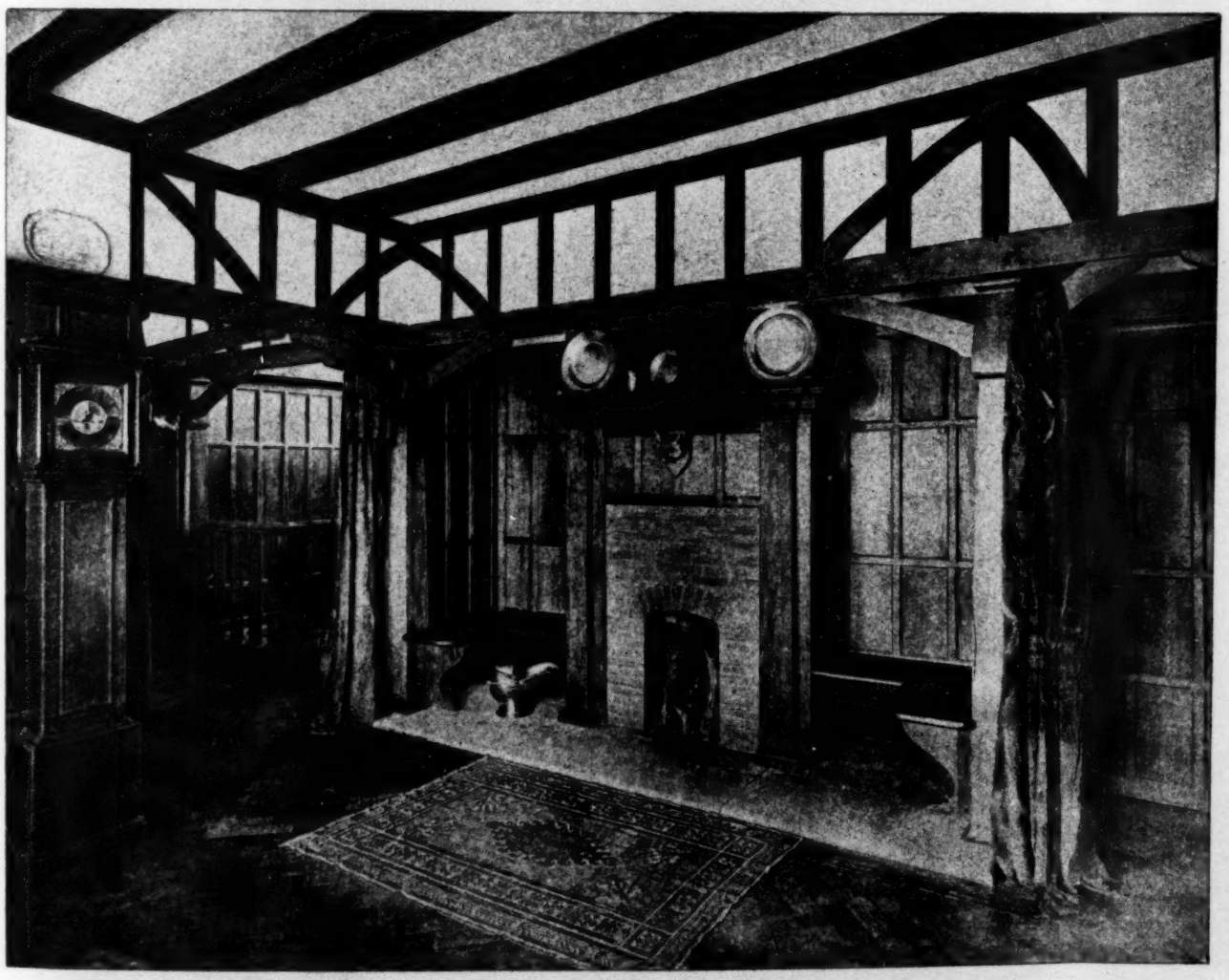
PRINCIPAL ENTRANCE.

THE DRAWING ROOM.

"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

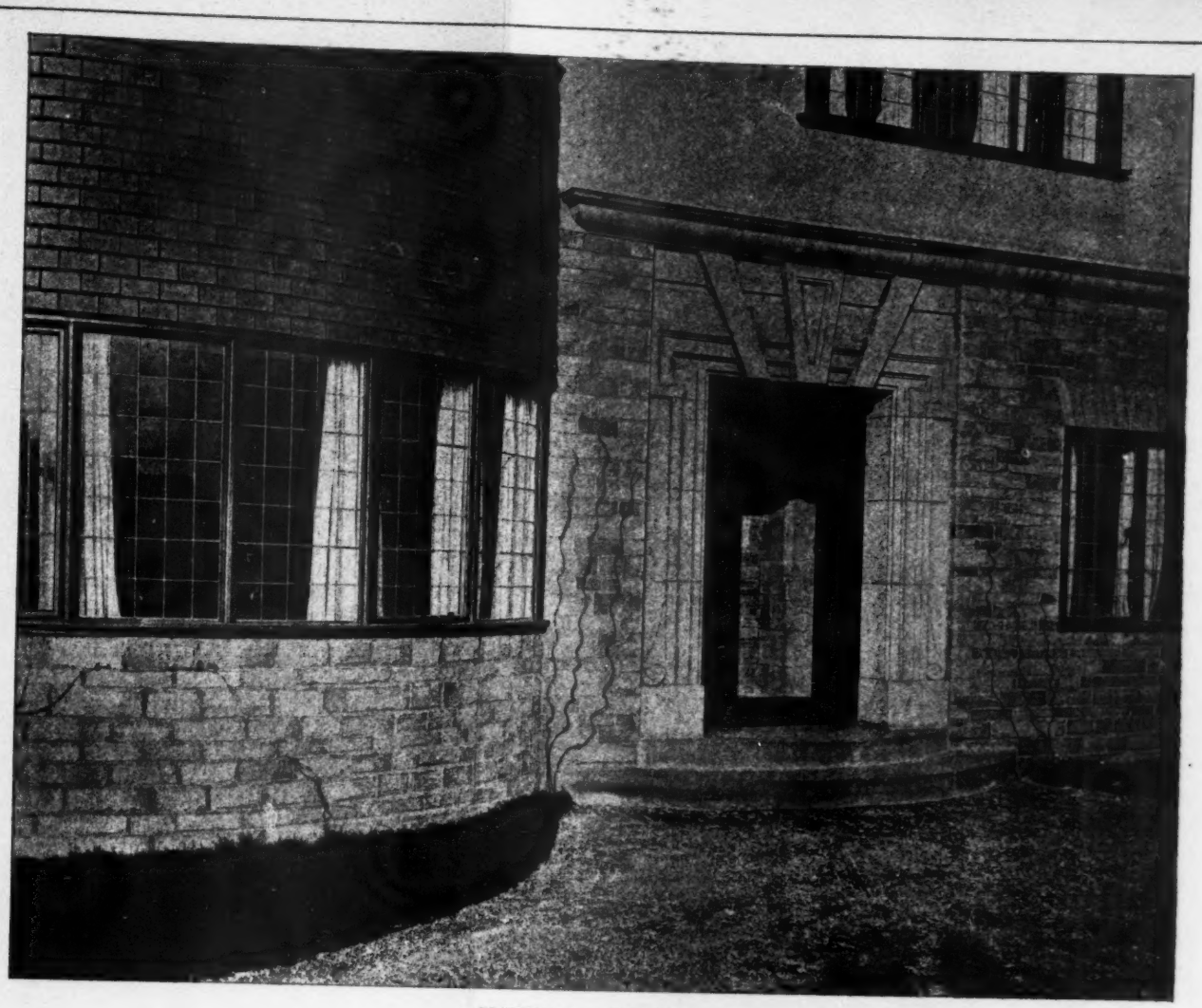


GENERAL VIEW OF HOUSE AND LODGE.



THE HALL.

THE GATEHOUSE, BRIGHOUSE, YORKSHIRE



PRINCIPAL ENTRANCE.

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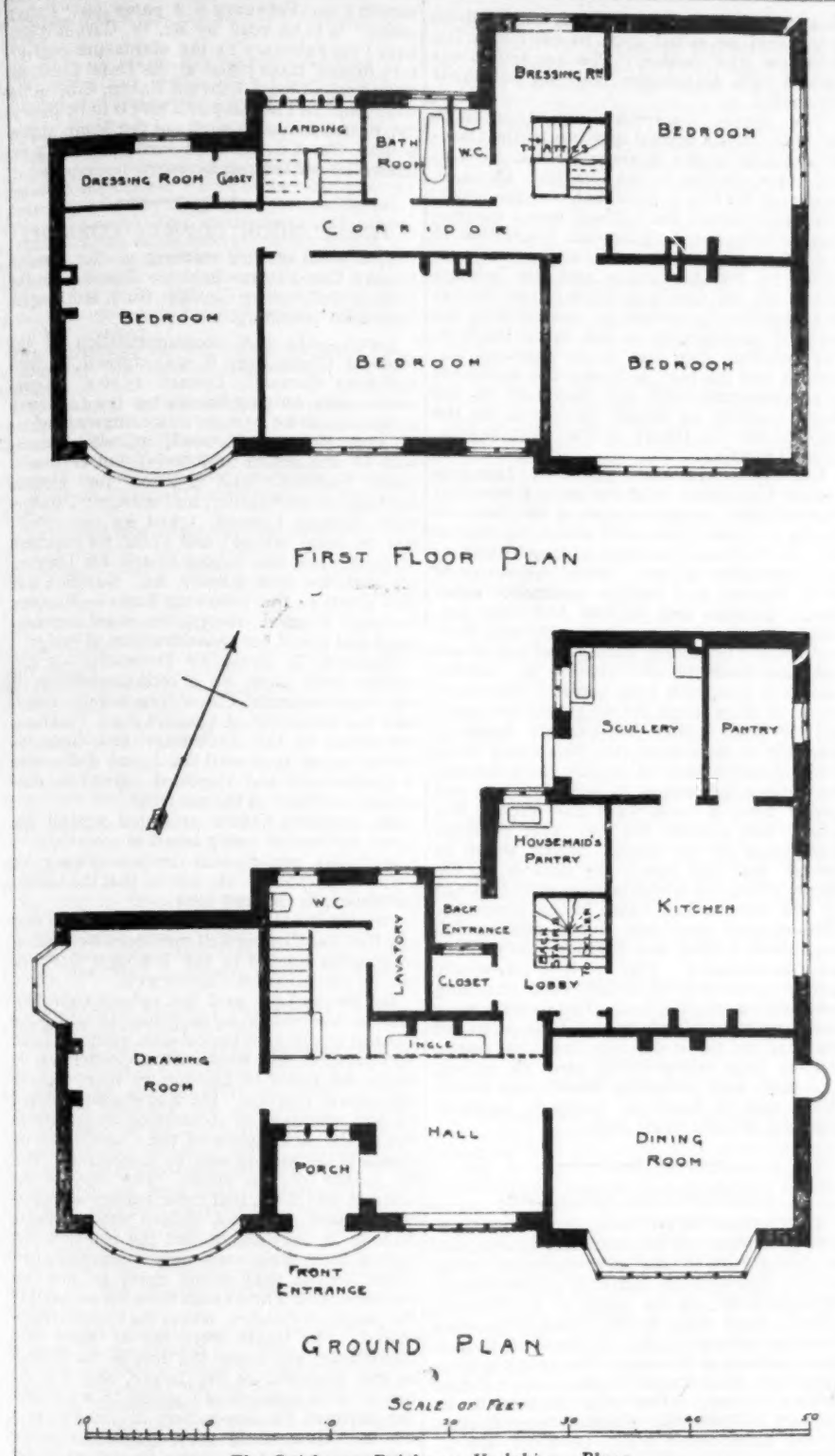
ORKSHIRE.—Mr. Albert E. Kirk, A.R.I.B.A., Architect.

Figure 1.1 Interactions among input and output devices, an application program, and a graphics package.



The Gatehouse, Brighouse, Yorkshire. Plans.

to boats or shipping apparently cannot understand.

The lamp standards must be considered as only blocked out roughly; their detail could not have been executed on this scale except by a jeweller; it need only be observed that they represent the usual and proper proportion of metal lamp standards to a large bridge, instead of being magnified to a preposterous scale, with an unnecessary column, as they are on the engineer's design; a treatment which has only the effect of reducing the apparent scale of the bridge.

The model was made by Mr. C. H. Mabey, from my plans, elevations, and sections.

H. H. STATHAM.

CITY OF MANCHESTER ELECTRIC TRAMWAYS.

THE electric car depôt and buildings in course of erection for the Corporation of Manchester occupy 4½ acres.

The sheds will accommodate 265 cars, which at ordinary times will all enter and leave by one gateway in Hyde-road, additional gateways being provided for emergency or busy times, and a side gateway in Devonshire-street, with office, to enable the northerly portion to be used separately if required.

All the cars will stand over large pits sunk 4 ft. 6 in. below the general floor level (the track rails being supported on steel stanchions), for convenient examination and repair of the motors beneath the cars; a passage 6 ft. high being provided along two sides of each pit for the supervision of workmen. Water supply for washing the cars will be attached to every column, the service piping being accessible under the gangways between the track lines, and suitable hydrants will be provided in convenient positions for protection against fire.

The buildings in Hyde-road and Devonshire-street, comprising offices, stores, and rooms for men, will be two stories high, faced with Portland stone and red pressed bricks, and the floors will be fireproof.

At the easterly end of the Hyde-road frontage an emergency inner waggon-house and four-stall stable will be provided, with doors to open automatically similar to the engine-house of a fire-station, where two "turn-outs" and requisite men will be always in immediate readiness in case of mishap to wires, &c.

About six acres of land have also been acquired adjoining the easterly side of the car shed for extensive car-repairing works, permanent way depot, sheds, stabling, &c., which will shortly be commenced.

The architect is Mr. J. Gibbons, of Manchester. Messrs. A. R. Bullivant & Sons (Manchester) are the general contractors for the work in progress, and Messrs. E. Wood & Co. (also of Manchester) for the steel and iron work.

HAMPSTEAD HOSPITAL.

THIS building, which is in course of erection, is to replace the existing hospital, which has been carried on for some years in some ordinary dwelling-houses in Parliament Hill-road. The site, which is close to St. Stephen's Church, Haverstock Hill, and on part of which Sir Rowland Hill's house formerly stood, is a very difficult one to treat, inasmuch as the slope is very considerable, and the area of the site very restricted for the number of beds that are required. The total number of beds provided in the building will be seventy-six, of which eight will be for paying patients.

The contract for the foundations only is being proceeded with, the other portion being left, and the work is being carried out by Messrs. Prestige & Co. Messrs. Keith D. Young and Henry Hall are the architects.

THE GATEHOUSE, BRIGHOUSE, YORKSHIRE.

THIS house has recently been erected at Brighouse, in the West Riding of Yorks, for Mr. T. Lister, from the designs and under the superintendence of Mr. A. E. Kirk, architect, of Leeds. The materials are local stone for the lower part, rough-cast above, and the roof covered with red tiles. The accommodation, as shown in the accompanying plans, consists on the ground floor of hall, dining and drawing rooms, kitchen and offices; and on the first floor, four bedrooms, dressing and bath rooms. There are larders and wine-cellars, &c., in the basement, and in the roof two attics and a dark room. There is stabling for four horses, and harness-rooms and coach-house are attached, and there is an entrance lodge.

The total cost of the buildings was about 3,000*l*. The contractors were:—Brick and stonework, Messrs. Tidswell, Bottomley, & Holmes; joiner's work, Mr. T. A. Hirst; plumbing, Mr. C. Candelatt; plastering, Mr. A. Firth (all of Brighouse); tiling, Mr. J. Smithies (Bradford); and painting, Mr. J. H. Stuttard (Huddersfield).

ALBERT E. KIRK.

ARCHITECTURAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY.—At a meeting of the Liverpool Architectural Society on the 19th inst., Mr. W. E. Willink presiding, the Liverpool City Building Surveyor (Mr. William Goldstraw) introduced the subject of the revised building by-laws of the Corporation. The by-laws in question, Mr. Goldstraw remarked, were provided in the Liverpool Corporation Act, 1902, which gave amended powers as to streets and buildings. He dealt with the various sections of the Act, and pointed out that one of the most important gave the Corporation the power to increase the width of new streets. Where the Corporation considered any new street to be a main thoroughfare or a main approach to the city they were now empowered to make it a maximum width of 80 ft. between buildings, instead of 36 ft. The object of this was to obviate the danger of having to pay heavy compensation in years to come. It was obvious that if they allowed the streets to be made 36 ft. between buildings, and the necessity subsequently arose to widen the thoroughfare and set back the building, very large amounts would have to be paid for compensation. In cases where a width of 80 ft. was insisted upon the Act gave the Corporation power to pay any reasonable compensation. It was also stipulated that no new houses were to be built on new estates before the street had been laid out with a proper foundation and had been sewered, curbed, and channelled, besides which the Corporation might require persons laying out estates to alter the proposed direction or position of any street and pay compensation. The Corporation were

further empowered to require that the corner of a new building situated at the corner of two streets be rounded off or splayed off to the height of the first story or more, in which case they might pay compensation. Where compensation was to be paid, if it was found that the improvement would be for the benefit of the owner of the building as well as the public, the arbitrator could take account of that and apply the principle of betterment. Another important provision related to the height of chimneys of manufactories and other similar buildings. Formerly the only question as to the construction of these chimneys was that of stability. A chimney might be of sufficient stability and yet be a nuisance to the neighbouring buildings. Where the owner of such chimney was summoned and fined for a nuisance and ordered to have the chimney raised, it might frequently happen that the existing chimney was not strong enough to allow of its being raised, and in order to avoid this the revised by-laws provided that such chimneys must in future be of such a height as the Corporation may require, having regard to the neighbouring buildings. Hitherto blocks of working-men's dwellings had had to be designed in accordance with the rule for ordinary dwellings, but the Corporation could now relax or modify the building regulations on condition that the Medical Officer of Health, the City Engineer, and the City Building Surveyor certify that sufficient provision is made for air space and ventilation. The first building to be dealt with under this new provision was the Working-men's Home, Bevington Bush, where a very large addition was now being made to the premises. A section of the new Act also dealt with the nuisance caused by posts placed in or near the kerbstone to support awnings which stretched across the footway. These were particularly noticeable in front of places of business in Church-street and Queen's-square. There was a statutory power allowing owners to put the awnings in that fashion, but that power has been repealed, so that in future the nuisance in question could not happen. Another street nuisance would be done away with by the occupiers of shops and offices being made liable to place all the refuse from their respective places of business in dust boxes provided by the Corporation. Referring to the new powers as to drainage by-laws Mr. Goldstraw said that in the past where an owner, contractor, and sub-contractor were concerned, it had been difficult to discover who was personally responsible for bad workmanship in the construction of drains; but in future if a water-closet or a drain was so constructed as to be a nuisance or injurious to health, the person who had so constructed it was liable to a penalty not exceeding 20*l.* unless he could prove that it was not due to any wilful neglect or default. The section also carried the principle further by making the workman liable. On the whole the revised by-laws were, Mr. Goldstraw maintained, drafted for the benefit and health of the city, and he trusted the good results would justify them.—Mr. J. Woolfall thought the question of the 80-ft. street required very serious consideration. He cordially approved of the regulation as to the construction of drains.—Mr. T. Myddleton Shallcross said it was a matter for congratulation that building surveyors throughout the country seemed in practical accord as to the necessity for the reform of the Public Health Acts affecting building by-laws, and that Mr. Goldstraw had set so excellent a precedent. If discussions took place between the officials of each sanitary authority throughout the United Kingdom and the architects affected by their respective jurisdictions, the result of their joint deliberations would probably be that substantial improvement in building, not excluding economies therein, would be effected. [Mr. Shallcross was proceeding to point out the necessity for various reforms in building generally, when, at the suggestion of the chairman, he agreed to reserve his comments for another meeting.] Mr. Grayson, in proposing a vote of thanks to Mr. Goldstraw, said it was advisable that great discretionary power should be given to officials like the Building Surveyor of Liverpool. Mr. Eccles seconded. The Chairman, in supporting, remarked that it was only advisable to give discretionary power where the officials could be implicity relied upon. Fortunately this was the case in Liverpool, and no one would be allowed to succeed Mr. Goldstraw and the other officials except those who could be relied upon to exercise a fair discretion and justice. The resolution was carried with acclamation, and Mr. Goldstraw responded.

THE ROYAL INSTITUTE OF ARCHITECTS OF IRELAND.—A special meeting of the Council was held at the Institute Rooms, 20, Lincoln-place, Dublin, on the 19th inst., Mr. G. C. Ashlin, F.R.I.B.A., President, in the chair. The matter before the Council was a communication from the Architectural Association of Ireland having reference to a proposal submitted by the Association that the Institute should set on foot a qualifying examination as a condition precedent to admission to the ranks of membership of the Royal Institute. The question gave rise to an animated discussion, and the hon. secretary was instructed to communicate with the Secretary of the Royal Institute of British Architects on the subject, and to report to the next regular Council meeting.

ARCHITECTURAL ASSOCIATION OF IRELAND.—This Association held the second technical demonstration at the premises of Mr. Edmund Sharp, 42, Great Brunswick-street, on Thursday, the 22nd inst., the subject being "Building and Decorative Stones." Many specimens of Irish, English, and foreign limestones, sandstones, granites, and marbles had been prepared, and the lecturer dealt fully with their comparative durability, stating that limestones and sandstones should always be rubbed smooth to stand the Irish climate. Any hammered or other rough dressings held the water, and the stone rapidly deteriorated. Speaking generally of Irish stone, Mr. Sharp said there were numerous beds of durable stone through the country, but owing to lack of energy and capital most of these were unworked. If a quarry was opened the top layer of stone was placed on the market, which would be porous and not nearly as durable as the deeper strata, and which consequently obtained for the stone a bad name in the profession. Glass mosaics were next shown, and the skill required in cutting and forming into patterns was demonstrated. This work is extensively carried on in the premises, and some charming specimens were exhibited. The students were next conducted round the workshops to see the altar and pulpit carvings in various stages, also the large labour-saving plant for cutting, rounding, and polishing shafts and bases. Work was in hand for England, Scotland, Australia, and the West Indies.

ENGINEERING SOCIETIES.

THE JUNIOR INSTITUTION OF ENGINEERS.—A large number of the members paid a visit on January 17 to the new electricity works of the Metropolitan Borough of Shoreditch, Whiston-street, on the banks of the Regent's Canal. They were shown round by the chief electrical engineer, Mr. C. Newton Russell, and members of his staff. Following so close upon Mr. Rounthwaite's paper on "Marine Boilers," read before the Institution on January 2, particular attention was directed to the boiler-house plant, in which are installed four water-tube Babcock-Wilcox marine boilers. Each has a heating surface of 2,720 square feet, and is fitted with an economiser containing 350 square feet of heating surface. Three of the boilers are hand fired; the other is fitted with a double 4-ft. chain grate stoker. A total of about 50,000 lbs. of steam per hour is generated. Coal is supplied from an overhead coal store of 750 tons capacity. A special feature is the Hunt Co.'s arrangement, by which the coal is lifted from barges on the canal, and conveyed to the bunkers. The hoist is driven by two electric motors of the enclosed type, supplied by the Westinghouse Co. There are three feed-pumps of Weir's make. The feed-water storage tank of cast iron, holding 12,000 gallons, is divided into two sections. The capacity of the hot well, consisting of a galvanised iron tank, is 1,500 gallons. It is placed on a weighbridge so as to afford a ready means of measuring the water discharged from the air pump when carrying out tests on the plant. The engine-house plant consists of two vertical low-speed Corliss compound engines, made by the Walls-end Slipway and Engineering Co., each direct coupled to a continuous-current Westinghouse generator, of 800 k.w. capacity; speed, 90 revolutions per minute; engines, 1,300 to 1,400 indicated horse-power.—At the next meeting on February 6 a paper on "Calorimetry" is to be read by Mr. W. Garnet Wernham; on February 14 the eighteenth anniversary dinner takes place at the Hotel Cecil, the President, Colonel Edward Raban, C.B., in the chair; and on February 21 a visit is to be paid to the East Greenwich works of the South Metropolitan Gas Co., through facilities kindly extended by Sir George Livesey.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, Sir J. McDougall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Battersea Borough Council 15,000*l.* in connexion with lodging-houses on the Lachmere allotments, and 5,750*l.* for street improvements; Fulham Borough Council, 35,000*l.* towards cost of acquisition and laying out of Southfields, Fulham; and 25,000*l.* for electric lighting, street lighting, and meters; Camberwell Borough Council, 1,000*l.* for reconstruction of canal bridge; and 4,000*l.* for purchase of land; and the School Board for London, 200,000*l.* for new schools, &c. Sanction was also given to the following loans:—Hackney Borough Council, 16,037*l.* for street improvement and 5,000*l.* for reconstruction of bridge.

Widening of Roads for Tramways.—A discussion took place on a recommendation of the Improvements' Committee not to undertake the widening of Queen's-road, Peckham, authorised by the Tramways' and Improvements' Act of 1902 until the Local Authorities of Camberwell and Deptford agreed to contribute one-third of the net cost.

Mr. Goddard Clarke protested against the Local Authorities being asked to contribute to a widening which was only necessary for tramway purposes. He moved that the recommendation be referred back.

Mr. Hardy seconded the amendment, and said that the Camberwell members were being continually taunted in the Borough that they did not get much for Camberwell.

Mr. Sidney Low said the subject under discussion touched a large principle which the Council would have to deal with sooner or later. The question was whether the Council was to widen the roads of London, or leave them in the present position. He was one who looked on the extension of locomotion in London as one of the first duties of the Council, and no means of locomotion was so important as that by means of the roads. The duty of the Council was to see that these arteries were preserved, and were not choked and congested. So long as they maintained the principle that each of these main roads only concerned a particular district, they would never get any real improvement. These roads were the property of the people of London, whom the Council represented. The roads were not of mere local importance, and it was the duty of the Council as the guardian of the larger, and not the merely local, interests of London, to watch over the facilities for locomotion in London as a whole. How could they maintain that the construction of a tramway in one particular district concerned that district alone? Every time they had a tramway scheme brought before the Highways Committee they were confronted with this question of local contribution, and he could not help thinking that, if they were to have a comprehensive system, they would have to abandon the hard and fast rule they had hitherto laid down. He failed to see what right they had to go to a poor district like Deptford or Bermondsey and say, "We require a tramway here for the people of London, and you must contribute one-third of the cost of widening the road."

The amendment was defeated, and the recommendation of the Committee adopted.

Housing.—The following recommendations of the Housing of the Working Classes Committee were agreed to:—

"That the estimate of 7,500*l.* submitted by the Finance Committee be approved; that the freehold of the site in Brixton Hill, near The Avenue, be acquired by the Council under Part III. of the Housing of the Working Classes Act, 1890.

That the estimate of 30,092*l.* submitted by the Finance Committee be approved; that the offer of Messrs. Holloway Bros. to build Hythe and Seaford and the remaining portion of Winchelsea Buildings, Swan-lane Estate, Rotherhithe, at the same reduction on the prices contained in their tender for the first portion of Winchelsea Buildings as they made

for the erection of Rye and Sandwich Buildings, be accepted."

Theatres, &c.—On the recommendation of the Theatres and Music Halls Committee the following proposals were agreed to :—

Fire-resisting curtain, Canterbury Music Hall (Messrs. Wylson & Long).

Re-arrangement of the seating in the stalls and balcony of the Chelsea Palace of Varieties, now in course of erection in King's-road, Chelsea (Messrs. Wylson & Long). This arrangement will, when carried out, result in an increase in the number of seats from 1,470 to 1,490, but the exits provided are of sufficient width for this increased number.

Alterations which have been made to the seating arrangements at the Excelsior Hall, Bethnal Green (Mr. Emden).

Arrangements for additional dressing-room accommodation at the London Hippodrome (Mr. F. Matcham).

A fire-resisting curtain which it is proposed to erect in the proscenium opening at the Paragon Music-hall, Mile End (Messrs. Wylson & Long).

An alteration in the arrangement of the internal staircase from the basement to the ground floor at the Hotel de l'Europe, Leicester-square (Mr. W. Emden).

A corrugated iron screen in front of one of the side shows at the Royal Aquarium (Mr. J. W. Wilkinson).

New exit to Gloucester-crescent, Royal Agricultural Hall (Islington Empire: Mr. R. Venner).

A fire-resisting curtain which it is proposed to erect in the proscenium opening at the South London Music Hall, Southwark (Messrs. Wylson & Long).

A fire-resisting curtain at the Variety Theatre, Hoxton (Messrs. Wylson & Long).

Richmond Hill View.—The following resolution was agreed to without discussion :—"That an indemnity against costs be given to any subscribers towards the purchase of Marble Hill who may be willing to join the Council as plaintiffs in the pending action against Sir J. Whittaker Ellis, provided that such co-plaintiffs agree not to be separately represented apart from the Council in such action, and that it be referred to the solicitor to take any necessary steps in the matter."

Old Kent-road Bridge.—On the recommendation of the Bridges Committee, it was agreed :—

"(*a*) That the estimate, amounting in all to 68,000*l.*, approved by the Council on January 28, 1902, in respect of the reconstruction for electrical traction of certain portions of the London County Council Tramways, be cancelled to the extent of 3,000*l.*, being the amount included therein for the purpose of the reconstruction of Old Kent-road Bridge.

(*b*) That the estimate of 5,500*l.* submitted by the Finance Committee be approved; and that the expenditure of a sum not exceeding the amount of the estimate be sanctioned in connexion with the reconstruction of Old Kent-road Bridge."

Protection from Fire.—The Building Act Committee reported to the Council the result of the proceedings taken under the Factory and Workshops Act in regard to the City Mills Buildings, Upper Thames-street. The Committee stated that the effect of the judgment would appear to be to make it practically impossible for the Council to deal with any "old" factory premises, other than those which are wholly in one occupation, and those which are tenement factories within the definition contained in the Act, as construed by Mr. Justice Buckley, *i.e.*, premises the whole of which is occupied as factories, the mechanical power for which is supplied from one common source. It will be easy for the owner of a factory building, by letting such building to more than one occupier, to nullify the provisions of Section 14 of the Factory and Workshop Act, 1901. It was recommended that the facts of the case be communicated to the Home Secretary, with an intimation that the Council will in future remit to him all cases with which it is unable to deal effectively under the present law, and that the Home Secretary be asked to receive a deputation to urge the necessity of the introduction of legislation to remove the difficulties arising from questions of trespass in the administration of the Factory and Workshop Act, 1901.

District Surveyors.—The same Committee reported with regret the death of Mr. H. Hart, District Surveyor for the District of Kensington, North-West. They stated that owing to the death of Mr. J. Tolley the District of Sydenham is also vacant. They also recommended that the resignation of Mr. A. Williams (who had asked to be allowed to resign) of his appointment as District Surveyor for the District of Kensington, South, be accepted as from January 31, 1903.

The Committee purpose submitting recommendations to the Council as soon as possible in regard to the appointment of district surveyors for these districts.

Precipitation Operations, 1902.—The Main Drainage Committee reported as follows :—

"We submit, for the information of the Council, the following table, showing the quantities of sewage treated, chemicals used, and sludge sent to sea, as well as the quantity of sewer refuse intercepted by the gratings, at the Barking and Crossness outfall works during the year ended December 31, 1902 :—

	Barking.	Crossness.	Total.
Sewage treated	49,598,200,000	35,325,432,000	84,923,632,000 gallons
Daily average	135,885,479	96,782,005	232,667,484 ,,
Maximum daily flow	287,811,000	163,297,954	—
Minimum daily flow	62,316,840	64,101,356	—
Lime used	14,586	7,808	22,394 tons
Proto-sulphate of iron used	3,250	2,138	5,388 ,,
Sludge sent to sea	1,784,000	823,000	2,607,000 ,,
Average per week	34,307	15,827	50,134 ,,
Refuse from gratings	3,787	960	4,747 ,,

By comparing the above figures with the returns for the previous year, we find that there is a decrease of 917,460,000 gallons in the quantity of sewage treated."

The Council adjourned at seven o'clock.

Correspondence.

THE QUANTITY SURVEYOR.

SIR,—I regret that so little interest appears to be taken by the profession in establishing a home for themselves, as I had hoped that ultimately the Builders' Federation would have refused to tender on quantities not prepared on a "thorough" system adopted by representatives of the builders and surveyors, which would get rid of the slovenly and happy-go-lucky bills of quantities, often prepared by people whose experience is somewhat limited or whose duties are so multifarious that they have not time to undertake the detail work required in carefully prepared quantities, as well as to arrange differences and remove injustice between the builder and the building owner, in addition to having one meaning for one word; for at present no wise London architect would employ a south country quantity surveyor for any work he had in the north or midlands unless his client had unlimited means.

I do not think much of the argument of one of your correspondents who considers that an association would enable quantity surveyors to obtain 2½ per cent. commission, as every quantity surveyor will get what he is worth exactly as an architect or solicitor would. Nor do I think many responsible men would adopt the extraordinary reasoning of another correspondent, who seems to think that the object of my ambition is to add to my name some more mysterious initials to puzzle mankind. Personally, I have never used the letters I have a right to use with anything like the ostentatious professional parade with which your correspondent has used the initials of the Surveyors' Institution. His contention that the latter association—which is largely composed of auctioneers and estate agents, whose ideas of quantities generally are most elementary—is sufficient for the profession is unworthy of serious notice.

I have had several letters myself and a few have appeared in your widely-read journal, but only one from a London surveyor, and as it is necessary that any association should have its centre in the metropolis, I shall be glad if all surveyors reading this letter will write to Mr. F. B. Hollis, 17, Bedford-row, W.C., who very wisely suggests that some of the leading surveyors should interest themselves in it, stating their views respecting the formation of an association.

W. HOFFMAN WOOD.

Leeds.

FIRE STATION, RUSHDEN.—A new fire-station has just been opened at Rushden. The architect was Mr. Madin.

BOOKS RECEIVED.

CHINESE PORCELAIN. By W. G. Gulland. Vol. II. (Chapman & Hall.)

THE CATHEDRAL CHURCH OF NOTRE DAME, PARIS. By Charles Hiatt. (Geo. Bell & Sons. 2s. 6d.)

THE COLLEGIATE CHURCH OF STRATFORD-ON-AVON. By Harold Baker. (Geo. Bell & Sons. 1s. 6d.)

THE ABBEY AND TOWN OF MONT ST. MICHEL. By H. J. L. J. Massé, M.A. (Geo. Bell & Sons. 2s. 6d.)

SPIRALS IN NATURE AND ART. By Theodore A. Cook, M.A., F.S.A. (John Murray.)

PICTURESQUE OLD HOUSES. By Allan Fea. (S. H. Bousfield & Co. 10s. 6d.)

THE ROCK TOMBS OF DEIR EL GELRÂWI. (Archæological Survey of Egypt.) By N. de G. Davies. Eleventh and Twelfth Memoirs. (Kegan Paul, Trench, Trübner, & Co.)

ST. PAUL'S CATHEDRAL: AUTHORISED GUIDE. By Louis Gilbertson, M.A. (Chiswick Press. 6d.)

FARM COTTAGE HOLDINGS. By H. B. M. Buchanan. (County Gentlemen's Association. 3d.)

The Student's Column.

BUILDERS' TOOLS AND THEIR USES.

CHAPTER 2 *(continued).*

Bricklayers' Tools: Accessories and Plant.

THE foregoing (see last issue) might be supplemented by the following articles employed by the bricklayer, which articles more properly come under the head of accessories and plant :—

1. Banker.
2. Chopping block.
3. Screen and sieve.
4. Wheelbarrow.
5. Mortar and concrete boards.
6. Concrete box.
7. Watering-pot.
8. Shovel.
9. Larry.
10. Measures.
11. Hod.
12. Bucket and brush.
13. Squares, &c.
14. Templets.
15. Trammel.
16. Rods.
17. Pulleys.
18. Winches.
19. Scaffolding, &c.
20. Mortar mills.
21. Centering.
22. Carts.
23. Office on works.
24. Crane.

The *Banker* is a wooden bench, some 8 ft. long by 3 ft. wide by 2 ft. 8 in. high, at which the bricklayer cuts and rubs his bricks for gauged and other work.

The *Chopping Block* is about 8 in. square, and made from any rough piece of timber. It supports a brick in an angular position convenient for cutting and axing, and is generally rested on a temporary brick pier about 2 ft. 6 in. from the ground (fig. 39).

Screen and Sieve. — The former is for separating coarse gravel from hoggin or small gravel, and for screening lime, sand, breeze, rubbish, &c. Lime and sand may be most efficiently mixed by screening them together. The screen is placed at an angle of 60 deg. from the ground, and the material to be screened is forcibly dashed against it by means of a shovel, the finer particles passing through and falling beyond, while the large stones roll down its surface and come down on the nearest side. The best size is 6 ft. by 3 ft., with the sides and corners of the frame strongly clamped with iron, and strong iron bars at the back (fig. 40). The iron wires should be wrapped round the iron cross-bars, so that the meshes cannot be displaced or wear loose, the usual mesh for general purposes being $\frac{5}{16}$ in., but it varies from $\frac{3}{16}$ in. up to $\frac{1}{2}$ in. For large quantities a rotary gravel-screen machine may be employed, worked by hand power.

The sieve is chiefly used for riddling gravel, &c., often to a greater fineness, and is worked by hand, a good size being 22 in. or 24 in. diameter, the meshes ranging from $\frac{3}{16}$ in. to $\frac{3}{8}$ in. (fig. 41). The circular frames or rims should be of oak, 6 in. deep. A sieve is sometimes termed a riddle, and it is generally the most satisfactory mode of sifting small quantities of sand, gravel, &c.

The *Wheelbarrow* is similar to that of the excavator, and is needed for wheeling bricks, rubbish, sand, &c., to and fro on the works.

Mortar and Concrete Boards.—The mortar-board is about 3 ft. square, and used for mixing mortar on, as well as to contain mortar during the process of building by the side of the bricklayer on the scaffold as he lays his bricks. Sometimes a small hawk, like that of the plasterer, is wanted for the same purpose when jointing. For mixing concrete on, a boarded stage, 15 ft. by 8 ft. is convenient

to prevent the intrusion of clay or other deterioration.

The *Concrete Box*, as required for measuring the ingredients of concrete previous to mixing, is depicted in fig. 42. They are both with and without bottoms, a suitable size being 5 ft. 6 in. by 5 ft. 6 in. by 1 ft. 4 in. deep = 1½ yd. cube, for large quantities, with two handles at either end. Other sizes of boxes for measuring sand, cement, &c., are 13⅛ in. by 13⅛ in. by 13⅛ = 1 bushel, and 3 ft. by 1 ft. 6 in. by 1 ft. 6 in. = 5¼ bushels, but these vary according to the proportions of materials required.

Bottomless boxes are the handiest, as when they are filled up they are simply lifted, leaving the materials ready for mixing on the wooden platform. A good size for gauging materials is 5 ft. 6 in. by 3 ft. 4 in. by 1 ft. 6 in. = 29 ft. cube, which is a little more than a yard cube to allow for shrinkage of the materials when made up into concrete. Besides this there may be a smaller box for measuring cement according to the proportions specified, from which the aggregate is made up and filled into the larger box. In fact, the boxes may be of various convenient sizes to get the required capacity.

The *Watering Pot* is used for sprinkling the water when making concrete, which should find an outlet through a large copper rose, and in the form of a spray.

The *Shovel* is for mixing up mortar and concrete, and has a long, straight handle, while the blade is pointed.

The *Larry*, or mortar larry, is a kind of rake employed for mixing and chopping up mortar, it differing from the plasterers' larry in having no prongs (fig. 43). A shovel is, indeed, more often requisitioned for this purpose than a larry.

Measures for lime, &c., of wood, are illustrated in fig. 44. A common capacity is one bushel, or one cubic foot.

The *Hod* is used by the labourer for carrying mortar as well as bricks to the bricklayer (fig. 45). The ordinary size is 16 in. by 9 in. each way, and it is fixed at the top of a long handle or leg, about 3 ft. 6 in. long, upon which it is supported during the process of filling and emptying. It commonly holds twelve bricks (more than this would be too heavy), though it is reputed to have a capacity for sixteen or twenty, and it will contain two-thirds cubic foot, or nearly half-bushel of mortar. Part A rests upon the shoulder of the hodman, who grasps the shaft, and that portion is made thicker by means of a wooden roll for this purpose. The other part is supported by an angle stay. B is a piece of wood to clean the hod with, and it is kept in a small leather strap. Iron hods are sometimes in demand, though rarely.

Bucket and Brush.—The former is needed to contain the water necessary for wetting the bricks, as well as for the making of mortar. It should be of galvanised iron, hooped at top and bottom, with strong riveted sides and about 12 in. diameter, capable of holding three or four gallons. Bricks ought to be well wetted before being laid, in winter as well as in summer, for if laid dry the mortar will not adhere to them, as their surfaces are coated with dust, which prevents the adhesion of the mortar. This is dangerous during frosty weather, and the wetting of stocks should then be carried on with discrimination, though in the United States, where frosts are severer than in this country, the risk is avoided by executing work with heated bricks and heated mortar. It is all the more necessary to moisten bricks where cement mortar is used or the materials will not be adhesive, and in this connexion the fact that wet bricks make the fingers of bricklayers sore has probably something to do with the frequent neglect.

The brush for the above process is an ordinary nailed stock whitewash brush (fig. 46), though as often as not the bricks themselves are dipped in the pail as it rests on the scaffold beside the bricklayer. This brush is also handy for moistening mortar that is too stiff when sent up to the bricklayer, and for wetting the tops of brick courses.

Squares, Triangles, and Bevels are of wood, and are used for setting-out work at right angles, pitches of gables, &c. Tee-squares are employed for accurately marking vertical joints on brick facing.

Templets are likewise required for setting out work, and such a piece of plant constitutes a kind of mould made of thin pieces of wood nailed together to the requisite form. For instance, fig. 47 illustrates a templet for setting out a bay window, made out of 4 in. by ¾ in. stuff. This is placed on the ground, and the walls are built round it. Profiles serve a similar purpose to gauge work to.

Trammels are more often used by the mason and carpenter than by the bricklayer, and are needed for striking out ellipses and other curved work. (For full description see "Carpenter.")

Rods.—A rod is a strip of wood, about 1½ in. square, and some 10 ft. long, marked in feet and parts of feet, and affording a ready means for setting out walls, heights, &c. Thus the plan of a building is laid out by means of these rods, two or more being employed if the length of one is not sufficient. On them are marked the various widths of the walls, recesses, &c., full size, and these are taken as guides to set out the work. The mode of procedure is sketched in fig. 48, the rod being applied from time to time as the work proceeds to see that the widths, &c., are carried out accurately. An upper floor would be laid out in a similar manner.

In the same way story rods, which are approximately 12 ft. high (according to the height of the story), are used for accurately setting out all vertical portions of work in that story. The heights of doors, windows, sills, string courses, &c., as well as every brick course, are exactly worked on the different sides of the rod in pencil, as in figs. 49 and 50. A different rod, worked in the same style, is required for each story.

Pulleys, also variously termed whip-pulleys, gin-blocks, or contractors' rubbish-wheels, are necessary adjuncts to the scaffolding for the purpose of hauling up materials. They are of iron, from 8 in. to 18 in. diameter, fitted in a light iron frame with hooks to hang up by (fig. 51). Pulley-blocks of iron or wood, and with brass, iron, or wood sheaves, are in similar employ; likewise Weston's patent differential pulleys, which consist of an endless chain passing round two blocks, the upper one being double, the mechanical advantage arising from the difference in the diameter of the pulleys, whence the name.

Winches and *Crabs*, single and double purchase; *Scaffolding* and accessories; *Mortar Mills*, driven by engines, and either portable or standing; *Centering*, including turning pieces; *Carts*, drays, and wheelbarrows; *Contractor's Office on Works*, a small temporary structure, and resting on sleepers or wheels; *Fib Cranes*, to lift one to ten tons, all come under the category of plant, as well as box trestles, walings, wooden shoots for concrete, temporary shores, large tool-chests, &c.

*** A correspondent has kindly drawn my attention to the bow saw, which is superseding the tin saw for cutting bricks; also to the substitution of wood moulds for zinc ones. While thanking him, it is only right to state that I have drawn my descriptions and sketches from observations made actually on the spot, and my object was to describe general usages and terms rather than special processes.—THE WRITER OF THE ARTICLES.

OBITUARY.

MR. NEWTON.—We have to record the death, at his residence, Quarry Farm, Northfield, near Birmingham, on the 15th inst., of Mr. Thomas Walter Francis Newton, aged forty years. Mr. Newton was the senior member of the firm of Messrs. T. W. F. Newton & Cheatle, architects and surveyors, of Birmingham. Mr. Newton, having practised independently during a few years at Birmingham, took Mr. Alfred Edward Cheatle into partnership. The firm were engaged as architects for the development of the New-street quarter in Birmingham by the erection of the New Midland and City arcades by the City Arcades Co., and for extensive improvements upon the Colmore Estate in that city. For the two arcades, the contract for the first section of the scheme was let to Mr. E. J. Charles, of Moseley, in November, 1898. They were opened on October 18, 1901, the cost, with that of the adjoining premises, amounting to some 250,000*l.* The Midland Arcade runs from New-street to the City Arcade, which begins in High-street (where it adjoins the Louvre) and continues to near the junction of Union and Corporation streets, with a branch into New-street. Thus the two arcades connect those four streets; they have subways beneath them, for the delivery of goods to the shops, and comprise about 200 shops and offices. The façades are of terra-cotta, by Messrs. Doulton & Co., of Lambeth, and the style of design is Renaissance. Last year the firm prepared the plans and designs for a separate company for a range of buildings fronting New-street, and consisting of four large shops, about one hundred offices, and five sets of warehouses in the rear, upon a site between the two arcade entrances in New-street; considerable extensions of the Louvre, in High-street, were also carried out as part of the earlier scheme as undertaken by the City Arcades Company. The improvements, begun four or five years ago upon the Colmore estate, include blocks of offices, suites of rooms, and chambers, for doctors and other professional men, residential houses, &c.; in Newhall, Edmund, Church, Cornwall, and other streets.

MR. GIBSON KYLE.—The death is announced of Mr. Gibson Kyle, at his residence, 2, Roseville, Bensham, Durham. Born at Ponteland in 1820, Mr. Kyle served his apprenticeship as an architect with his uncle, Mr. John Dobson, and acted as clerk of works at the building of the Central Railway Station. He also carried out the work of erecting the first of the now existing buildings in Grainger-street West—then St. John's-lane—for Mr. Angus. Subsequently he was appointed architect for the Dean and Chapter of Durham, and some of the public buildings, as well as a training college in Durham City, were from his designs. In partnership with Mr. John Dobson, the deceased gentleman erected a suite of offices on Newcastle Quayside, and he also designed a large number of churches and other buildings in the district. One of the founders of the Northern Architectural Association, he was probably at his death the last of the members who saw its inception. His last work was the Gallowgate Corporation Baths some five years ago, the position of architect for which he won in open competition. He is survived by a son, who carries on business as an architect in Newcastle. The funeral took place at Elswick Cemetery.

GENERAL BUILDING NEWS.

ST. THOMAS CHURCH, EASTVILLE, BRISTOL.—The nave of St. Thomas Church, Eastville, has been extended. From the transepts the nave has been carried almost to the main road, the work being in keeping with the style of the original building. The length from east to west walls is 135 ft., an extension of about 70 ft., and there are now seats for about 900 people; double the previous sitting accommodation. Roughly, the expense has been 4,500*l.* In addition to the extension of the nave, the old vestry has been done away with, a morning chapel taking its place, and new vestries and classrooms will be added on another occasion. Until then the clergy will robe in a temporary vestry in the organ chamber, and a temporary covered way has also been provided from the church to the parish rooms. A bell-turret with two bell-cots is constructed over the west end of the chancel, new chairs are being placed throughout, and the building will be lighted by electricity. The outer doors will be of oak, and there will be inner doors of pitch pine. A memorial window in the north side to the memory of Mr. Alonzo White, who fell in the South African war, is also in process of construction. The extension has been carried out according to plans prepared by Mr. H. C. M. Hirst, architect; the clerk of works has been Mr. R. Bennett; the builders, Messrs. R. Wilkins & Sons; and the electric light installation has been effected by Mr. Winter.

CATHOLIC CHAPEL AND SCHOOLS, TOOTING.—New Roman Catholic buildings have been erected at Tooting. The new schools, which are situated in Undine-street, Mitcham-road, have been erected from the design of Mr. R. Chalmers Neat, and the building arrangements were carried out under the supervision of Mr. F. J. Webster (the secretary of the committee). The ground floor will for the present be used as the temporary chapel for the Catholics living in the district, until such a time as a suitable church can be erected on the site of the present building.

WESLEYAN CHURCH, DARLINGTON.—On the 21st inst., the foundation-stone was laid of a new Wesleyan church in Corporation-road, Darlington. At present there is a large school-chapel, which will be used for a Sunday-school, the new church and additions to the school being estimated to cost about 7,000*l.* The architects are Messrs. W. J. Morley & Son, Bradford. The new church will be of pressed brick, with stone dressings. There will be a tower and spire rising nearly 100 ft. Besides the main building, there will be classrooms, vestry, and a gallery at one end. There will be accommodation for about 800 people. The interior woodwork of the waggon-headed roof, pews, &c., will be of pitch pine, and the windows will be open tracery, with ornamental leaded lights.

CHURCH, VICTORIA DOCKS, E.—The foundation-stone of the new Church of the Ascension has just been laid at Victoria Docks. The architects are Messrs. Cutts. The building is in the thirteenth-century style, resting on arches of brick and concrete piles, which go down to a depth of 14 ft. in the soft marshland before they find a solid foundation.

RESTORATION OF WOTTON-UNDER-EDGE CHURCH, GLOUCESTERSHIRE.—A special service was held at the parish Church of St. Mary the Virgin, Wotton-under-Edge, recently, to commemorate the restoration of the tower and the re-hanging of the peal of eight bells. The pinnacles of the tower had become

so unsafe that before the work was actually taken in hand two of them had to be taken down to prevent accident. The battlements were also very much decayed, and all of them were more or less loose and very unsafe. Mr. Walter B. Wood, of Gloucester, was the architect, and the firm of Messrs. A. Estcourt & Son, also of Gloucester, carried out the work. The carving of the pinnacles was done by Mr. H. Frith, of Gloucester.

HOTEL, SHEFFIELD.—A new hotel is to be built in Sheffield with frontages to Leopold-street and Orchard-lane. It is to be built under the auspices of the Yorkshire Hotels Syndicate, and, including site, building, and equipment, the cost is estimated at 120,000*l*. The main front in Leopold-street will extend from near the end of Johnson & Appleyard's premises to Orchard-lane. To Orchard-lane there will be a front of 200 ft. The ground plan shows the accommodation downstairs, where all the public rooms will be located. The large dining hall will accommodate 250 guests. There are to be two coffee rooms, a grill-room, private dining-room, commercial room, smoke-room, billiard-room, reading-room, drawing-room, and a large conference-room for company meetings and arbitrations. The bedrooms for visitors are to number 190. The architects are Messrs. Chorley, Connon & Chorley, of Leeds. Mr. James Fidler is the general contractor.

PUBLIC OFFICES, ULVERSTON.—Recently the Urban Council purchased a block of buildings in Queen-street, formerly the Westmoreland Bank, having its main frontage to Queen-street, and abutting on to Benson-street and Theatre-street. Arrangements have recently been effected for the conversion of this property into offices for all the public officials of the town, and board rooms for the Urban and Rural District Councils, School and Cemetery Boards, Guardians, &c. The plans have been prepared by Messrs. James Grundy & Son, architects, the contract let to Mr. Nelson Wearing, builder, and the work of conversion is now in hand.

ROYAL NORTHERN CLUB, ABERDEEN.—Alterations and additions are being made to the Royal Northern Club, Union-street, Aberdeen, by Messrs. Fordyce & Co., builders. The plans, prepared by Mr. A. Marshall Mackenzie, A.R.S.A., provide for a new wing being built at the corner of Huntly-street, corresponding to the one on the other side.

CONGREGATIONAL CHURCH, NORTHAMPTON.—The new Congregational Church on Primrose Hill, Kingsthorpe-road, Northampton, was opened recently. The building has been erected from the designs of Mr. Alexander Anderson. The chapel is entered through a vestibule supported by stone pillars, and stretching across the front of the chapel above the vestibule is a stone panel carved with eight life-sized figures symbolical of joyful worship. At one end of the vestibule is a deacons' vestry, and at the other is a staircase leading to the gallery which stretches along the bottom of the chapel. The total length of the interior is 90 ft., and there is accommodation for 500, the seating consisting of pitch pine pews. The chapel is in octagon shape, the dome roof being supported by four angle arches. The building was erected by Mr. G. W. Souster, and the total cost is about 2,800*l*.

EXTENSION OF ABERDEEN ART GALLERY.—Plans have been prepared by Mr. A. Marshall Mackenzie, A.R.S.A., of the proposed extension of the Aberdeen Art Gallery. In order to carry out the new scheme an arrangement will be come to with the Governors of Robert Gordon's College for the acquisition of a piece of ground which will enable the gallery buildings to be carried some 30 ft. back beyond the present limit. A large extent of floor space will be required for the display and exhibition of the projected sculpture section, and under the new scheme this will be provided for. The whole of the present central hall and the additional space which will be obtained behind will be devoted to sculpture, and the small east and west rooms will also be extended and used for museum and other necessary purposes. The roof of the main gallery will be heightened, and the proposed scheme is to build new galleries, constituting a suite of rooms extending round the entire structure.

CHURCH, SWINDON.—A new church has been erected at Swindon from plans prepared by Mr. Ponting, the Diocesan Architect.

PROPOSED SCULPTURE GALLERY, ABERDEEN.—At a meeting of the Aberdeen Art Gallery Committee, on the 22nd inst., a letter was read from the trustees of the late Mr. John Clark, sometime in Aberdeen, intimating a donation of 7,000*l*. for the purpose of altering and enlarging the gallery so as to provide a sculpture hall. The committee received the intimation of this offer of Mr. Clark's trustees with pleasure, and resolved to take steps to enable them to comply with the conditions on which the grant is made. Mr. A. Marshall-Mackenzie, A.R.S.A., submitted plans of the proposed enlargement, and instructions were given to apply to the governors of Gordon's College for the necessary ground behind the gallery.

NEW OFFICES, NEWCASTLE SCHOOL BOARD.—New offices have been erected in Northumberland-road for the use of the Newcastle School Board. The office and pupil teachers' centre form a complete group of buildings, divided into two blocks, the accommodation for the members and the Board's staff being arranged in one, and that for the pupil teachers in the other block. The entrance, which is in the centre of the Northumberland-road elevation, opens into an entrance hall and staircase. On the ground and semi-basement floors are the various offices, the general or inquiry offices being in a convenient position, and communicate with the rooms occupied by the chiefs of departments, the typists, and the inspector. In the basement are the attendance offices, a room for the clerks, strong-rooms, stores, &c., including lavatories. On the first floor and to the front is the Board-room, about 32 ft. by 27 ft., lighted by four windows, panelled in oak. Opening off the dais end of the room is a lobby with book-lifts to general offices and basement, and telephonic communication to every office, and beyond a waiting-room. The Chairman's room and the committee-room face on to Northumberland-road. Cloak-rooms for the members complete the accommodation on this floor. The caretaker, whose apartments are on the second floor, has a private stairway which surrounds a lift reaching from basement to roof. The pupil teachers' centre is arranged at the back of the main block, the girls entering from Northumberland-road and the boys from the side street. The ground floor is occupied by two class-rooms, the cloak-rooms, and entrance passages. On either side is a staircase for males and females; and on the first floor three large classrooms divided by glass partition, which can be removed and the room thrown into one. There are also rooms for the teachers, &c. The second floor is devoted to chemical and physical laboratories, with the necessary preparation, dark rooms and stores, the whole fitted with the usual demonstration tables, benches, suites, fume closets, &c., and ventilated by means of an electric fan. The classroom and staircase have glazed brick dadoes. The whole of the buildings are warmed by steam, and lighted by electricity. The general works have been executed by Messrs. J. & W. Lowry, contractors, the warming by Dinning & Cooke, and the electric light by Mr. Usher. The marble work is by Walker & Sons, and the oak furniture by Mr. Ralph Hedley, the remaining offices being by Mr. Sopwith. The whole works have been carried out from the designs and under the supervision of Mr. W. H. Knowles, architect, Newcastle.

HIGH SCHOOL FOR GIRLS, CLAPHAM.—A new building has been erected on South Side, Clapham Common, for the Girls' Public Day Schools Co. The new school occupies the site of one of the old Clapham residences, known as The Lawn, and it has a frontage of 150 ft. It is built of red brick, with stone facings, and will provide accommodation for about 450 scholars and eighty student-teachers. It is principally divided into three departments, viz., a kindergarten department, a department for the ordinary schoolgirl, and a students' department. Whilst the area and ground floor are devoted to the usual offices, such as kitchens, cloakrooms, lavatories, rooms for staff, the secretary's room, stationery, cupboards, &c., the two floors above that are divided into a large assembly hall, with some fifteen classrooms, all facing the sunny side of the building, and each accommodating about thirty scholars; two art studios, two science rooms, and three sound-proof music-rooms, with the housekeeper's and servants' sleeping quarters above. At the rear is a gymnasium, with tennis courts and playgrounds for the girls. Mr. J. Osborne Smith, of Westminster, is architect to the company; the building has been erected by Messrs. Killby & Gayford, of Finsbury, under the superintendence of Mr. Constantine as clerk of works. The cost of the building has been between 14,000*l*. and 15,000*l*.

BRIDLINGTON GRAMMAR SCHOOL.—New buildings have just been added to this school. The first part of this extension—a detached building for science and art instruction, comprising laboratories for physics and chemistry, lecture-room, preparation-room, and art-room—was opened by Lord Wenlock in July last. The new buildings now to be opened form a considerable extension to the north of the original buildings, which were opened in August, 1899, and provide additional accommodation for day boys as well as boarders. On the ground floor two additional class-rooms are provided, completing the group of six arranged around three sides of the central hall; two day rooms for the boarders; nine studies for the boys; four masters' sitting-rooms; and masters' common-room. There are also a changing-room, fitted with lockers and lavatory basins; a lavatory fitted with basins on one side and a range of shower baths on the other side; and a boot-room. On the first floor there are five new dormitories, four for six boys each and one for ten boys, and as one of the dormitories in the original building which had been temporarily converted into matron's rooms will be now made available, the total accommodation for boarders will be increased to nearly seventy. Separate lavatories are provided near the new dormitories, with a separate basin for each boy; also four new bathrooms, one of which is fitted with two shower-baths, and housemaids' closets and water-closets. On the first floor there are also four masters' bedrooms, sitting-room and bedroom for the matron, and a large linen-room. On the second floor are three sickrooms, with separate bathroom, housemaid's closet, and water-closet. The new buildings have been designed by Mr. John Bilson, F.S.A., of Hull, and have been carried out by Messrs. John Jaram & Sons, of Scarborough. Messrs. Wright Bros., of Sheffield, have executed the heating apparatus, and Messrs. Illingworth, Ingham, & Co., of Leeds, have made most of the fittings.

HULL BUILDING TRADE.—During the first nine months of the past year average activity, says the *Eastern Morning News*, prevailed in the building trade of Hull. The last quarter, however, witnessed a diminution in operations. This was especially noticeable in connexion with speculative building, and is attributed to over-production. In some quarters it is stated that certain clauses in the proposed Omnibus Bill, relating to the erection of property and the construction of streets, have also acted as a slight check upon the trade. The number of houses erected of the smallest type was slightly below the average of previous years. Notwithstanding this, however, the number of plans passed by the Corporation was practically equal to that of 1901. The price of materials underwent little change, and no trade disputes arose. The outstanding features of the year were the progress made with the Mayor's extension scheme, the demolition of dilapidated buildings, and the extensive developments of the city to the north and west. Without doubt, when the new public hall has been erected, the view that will present itself from the Whitefriargate Bridge will be at once striking and imposing. Amongst the many buildings that have been completed, or are nearing completion, in the immediate neighbourhood, are the Lancashire and Yorkshire Railway Co.'s offices at the corner of Savile-street and King Edward-street, and on the opposite side of the road the structure of the Prudential Insurance Co. Rapid progress was made with the extension of the Royal Infirmary. In Alfred Gelder-street, the most noteworthy feature is the new police-station. In Charlotte-street a new building, the Alexandra Theatre, was erected. Ecclesiastical enterprises were also undertaken during the year. A new church was opened at Dairycoates, and the foundation-stones of two others were laid at Newington and Wilmington. Amongst the projected developments may be mentioned the Public Hall; seventy artisans' dwellings, which will bring the total number of such houses in Hull up to 117; the Rowton Homes; improvements at Paragon Station; the School of Art; the extension of the Town Hall, for which designs that will not entail the expenditure of more than 100,000*l*. are being advertised for by the Corporation; and the new central Post Office. The outlook for the present year is not altogether promising, as the large number of empty houses in irrefutable evidence that the number of dwellings erected on the outskirts of the city has been considerably above the requirements.

NORWICH BUILDING TRADE.—The building trade of Norwich had a sorry experience in 1902. The strike, which lasted for eighteen months previously, had the effect of literally paralysing operations which, under more fortunate conditions, would have been undertaken, and those who had work to be done postponed it indefinitely. Consequently, when the men desired to go to work, they found that there was nothing for them to do. The principal jobs in the city were the alterations and additions to the General Post Office, the erection of the new Norwich Union Life Office, and the building of premises in Orford-place. A new church is in course of erection in St. James's Parish, and a Board school is to be built on Silver-road. Another big job is the new theatre in St. Giles's. Cottage building in the suburbs of Norwich during the past year was moderately brisk, but in no proportion to that of previous years. The streets then laid out have been filled in with houses, and these have readily found tenants.

TENEMENT DWELLINGS IN BIRMINGHAM.—Mr. W. B. Cregoe Colmore and his trustees have decided to build, as an experiment, a block of tenements on a piece of land at the corner of Hospital-street and Henrietta-street, near the bottom of Snow Hill. The building, which will have a frontage to Hospital-street of 95 ft., will be four stories in height, and will contain twenty-four tenements, sixteen of which will be two-roomed and eight three-roomed tenements. The tenements will not be all communicating, as in some flats, by an internal corridor or outside balconies, but they will be divided into three separate blocks, under one roof, each having one staircase. The staircases will be constructed of stone. Each tenement will be what is known as "self-contained." The living-rooms will measure in each case 140 superficial feet; the window will be recessed, and the space thus formed will contain a dresser, with a ventilated food cupboard. Leading from each living-room is planned a scullery, containing a sink, a copper, a bath, a plate rack, and a chopping block. Beyond the scullery, and disconnected by a small area, is a water-closet, one being provided for each tenement. In the disconnecting area space is found for a coal tunker, and there will be also arranged a shoot for ashes which will discharge into a receptacle on the ground floor. The bedroom will measure 120 superficial feet. In the three-roomed tenements the second bedroom will be smaller, but each will be provided with a fireplace. Ample space will be left at the rear of the building, which will be paved and used as a drying-ground. The

top story will be partly in the roof, the roof being of Mansard shape. The design of the elevation is considered an important matter, and an attempt has been made to free it from the usual ugly appearance of such buildings and retaining a distinctly domestic character. The buildings will be faced on all sides with red brick, the slates of the Mansard roof will be green, and the external woodwork will be painted. The sills of the windows will be made to receive flower-pots. The roof will be boarded, felted, and slated. The floors of the living rooms will be laid with small hard red quarries, and the bedroom floors will be of wood blocks. The floors of the building throughout will be fireproof, and special precautions will be taken to make them as far as possible soundproof. An important point in the plan is that every room can be entered separately from the entrance lobby without going through another room. The greatest care will be taken in all matters of detail; the walls will be plastered and "Duresco" coloured, a cement painted dado will be provided for the living rooms, door frames will be iron, doors will be strongly made, window-frames will be solid, wrought iron opening casements will be provided to each window hinged on pivots top and bottom to facilitate window cleaning. The architect is Mr. Arthur Harrison, of Colmore-row.—*Birmingham Post.*

HYDRO, ST. ANNE'S, LANCASHIRE.—The Building Committee of the St. Anne's Council has just sanctioned plans for a hydropathic establishment to be erected by a private company on a site bordering Fairhaven and St. Anne's. The building, which is to be called the Dunes Hotel, will have a frontage of 190 ft. to Clifton Drive, and be five stories high. It will be equipped with needle, electric, Russian, vapour, German, and plunge baths, and lighted throughout by electricity, and contain seventy-two bedrooms. The architects are Messrs. Woodhouse & Willoughby, of Manchester.

FOREIGN.

FRANCE.—The crematorium at Père Lachaise cemetery is to be entirely rebuilt under the direction of M. Formigé.——A monument is to be erected at Montmartre, on the Place Saint-Pierre, in memory of the part played by aëronauts during the siege of Paris. The monument, the model for which has been made by M. Bartholdi, will consist of a group in bronze surmounted by a luminous balloon.——The prize founded by M. Lheureux, the architect, and which is awarded to a sculptor and to an architect in alternate years, has been awarded this year to M. Ernest Barrias, the sculptor, for his monument to Victor Hugo. The first year the prize was awarded to Dalou, for his "Triumph of the Republic," and the second year to M. Girault for his Petit Palais.——The annual exhibition of the Cercle Volney has been opened. Among the exhibits are a pretty work by M. Bouguereau, sea-pieces by M. Léon Ruffe, a "Vieux Matelot" by M. Tattegrain, and some fine portraits by MM. Bonnat and François Flameng.——A new bridge is to be built over the Seine, between Courbevoie and Levallois-Perret.——M. Cave, architect, of Argenteuil, has been commissioned to build a new municipal theatre at Vannes, on the site of the former Mairie.——A new church is to be built at St. Jean-la-Ruelle, from the designs of M. Farcinade.——The Government has decided on promoting an international exhibition of "l'Habitation, des Industries du Bâtiment, et des Travaux Publics," to be held in the Grand Palais on the Champs Elysées, from July to November of this year.——A municipal theatre is to be erected at Bagnères de Bigorre.——An international fine art exhibition is to be opened at Hyères on February 15.——The death is announced, at the age of sixty-three, of M. Litoux, architect, of Paris.

SWITZERLAND.—The assessors appointed to adjudicate upon the designs sent in by twenty-four artists for the mosaic work to be put into the National Museum at Zurich have selected the designs by the following three artists: M. Johann Bosshard, of Charlottenburg; M. Werner Büchly, of Basle; and M. Auguste Giacometti, of Florence. These gentlemen have now to furnish coloured drawings, and the assessors will make their final award in three months' time.

INDIA.—Extensive improvements are about to be made at the Chinsura station of the East Indian Railway Co. The estimated cost is 24,000 rupees. ——The district agent of the East Indian Railway is about to recommend the construction of water supply works at Mokameh, Dinapur, Sutna, and Cawnpore. —— The Government of India has sanctioned a survey being made for a line of railway from Khurja station on the East Indian Railway to Hapur station on the Oudh and Rohilkhund Railway, a length of about thirty-seven miles. ——A water supply scheme for the South Suburban Municipality of Calcutta has been sanctioned.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Robert Hammond, consulting engineer, 64, Victoria-street, Westminster, has taken into partnership his son, Mr. Robert Whitehead Hammond, and has also given an interest in his business to Mr. John May, and to Mr. G. W. Spencer Hawes, who have been his chief assistants for many years. The business will in future be carried on under the style of Robert Hammond & Son.——Mr. Charles H. Mead, architect, has removed his offices from 8, Mortimer-street to 64, Berners-street, Oxford-street, W.

DISTRICT SURVEYORS' ASSOCIATION.—Mr. Alexander Payne has been elected President of this Association (composed of the surveyors under the London Building Act), and Mr. T. H. Watson, Vice-President. Mr. F. Wallen, who has for some years filled the post of hon. Secretary, has retired, taking the post of Treasurer, and is succeeded by Mr. Henry Lovegrove.

A CASE FOR FILING PAPERS.—The Library Supply Co. send us a specimen of their "Auto-fix Case" for loose papers. It is a strong case in the form of a small but thick folio book, hinged to open at the edge for inserting papers, and which can be placed on a bookshelf. It seems a convenient receptacle for keeping together loose papers so that they can be easily referred to.

THE LATE MR. TAGG-ARUNDELL.—In reference to the obituary notice of this architect in our issue of January 10, a correspondent who was formerly a resident in India writes that we were mistaken in the statement that Mr. Tagg-Arundell was on the Madras Council. It appears to have been a case of mistaken identity in regard to two similar names.

THE CEMENT TRADE AT RIO.—The British Acting Vice-Consul at Rio de Janeiro reports a considerable decrease in the importation of cement, the quantity imported having fallen from 144,698 barrels in 1900 to 89,509 barrels in 1901. Of the latter total 7,693 barrels came from the United Kingdom, as compared with only 3,925 barrels in the preceding year. Belgium sent 61,993 barrels (against 122,387 barrels in 1900), and Germany 19,200 barrels (against 17,144 barrels in 1900).

THE CONSISTORY COURT OF LONDON.—At a sitting of the Court in St. Paul's Cathedral on the 21st inst., Dr. Tristram, K.C., Chancellor of the Diocese of London, granted faculties in respect of the churches of St. John, Bethnal Green, and St. Luke, Holloway. In the former instance the faculty relates to the erection of a chancel screen of marble as a memorial to the late vicar, the Rev. E. Raven Hollings, and a side chapel to be used for early Communion and daily prayers, when only small congregations are present. The church, being one of ten district churches that were supplied, mainly through the exertions of Dr. Blomfield, Bishop of London, was erected for 2,000 sittings in 1828 from designs in the quasi-Italian manner by Sir John Soane. After the fire on February 16, 1870, the fabric was restored, as we read in Charles Mackeson's "Guide" of 1891, by Mundy, and the church was re-opened in March of the following year. The organ, by A. W. Coleman, 1871, having three manuals and thirty-four stops, was removed to the east end and reconstructed by Eustace Ingram six years afterwards. In the case of the church of St. Luke, Holloway, it is proposed to build, at a cost of 500*l.*, a choir vestry and a church room adjoining the chancel and transept, with an entrance from the choir vestry into the church. The new building will serve also for church meetings and similar purposes, and will stand upon unconsecrated ground that has not been used for interments. The church was erected for 1,080 sittings, after plans and designs in the Early English style by Lee, and was consecrated in 1860. The organ, rebuilt by Bevington forty years ago, had been originally in St. Paul's, Covent Garden.

HAINAULT FOREST, AND ITS PROPOSED PURCHASE.—As we announced last week, the London County Council have agreed, under conditions, to subscribe 10,000*l.* to complete the purchase-moneys for this open space, to be vested in them, and will take charge of the Bill. The Corporation of the City of London expressed their inability to contribute 10,000*l.*; they are charged with the maintenance of Epping Forest, and their resources are now diminished by reason of the termination in November last of the grain dues which yielded about 20,000*l.* per annum. The Bill enables the Corporation, London County Council, Metropolitan Borough Councils, Essex County Council, West Ham Corporation, and District Councils of Dagenham, Ilford, Leyton, Woodford, and Wanstead, or one or more of them jointly or severally, to acquire for public purposes Lambourne Forest or Common, the 52-acre piece and Fox Burrows Farm in Dagenham parish, and Grange Hill Forest in Ilford parish. The several lands appertain to four ownerships; they extend over an aggregate area of 803 acres, and negotiations for their purchase at a price of 21,830*l.* are opened. They lie on the ridge or watershed which rises to an altitude of 300 ft. on the east side of the valley of the river Roding; Fox Burrows Farm, 475 acres, for which 16,000*l.* it seems is asked, and of which the Commissioners of Woods and Forests own the freehold, was formerly waste of Hainault Forest enclosed by the Crown under the Act *ad hoc* of 1851, and since let for tillage. The price of Lambourne Forest, 188 acres, which has of late years been sadly ill-used by gipsies and vagrants, is 600*l.*; the rights of Colonel Lockwood, M.P., and Captain Ethelstone, as lords of the manors, over Lambourne Common, about 315 acres, could be purchased for, it is stated, 3,600*l.*; a sum of 1,730*l.* is asked for the fifty-two acres, now under cultivation, adjoining the farm, and 1,300*l.* for an equal enclosed piece skirting Lambourne Forest Mr. E. North Buxton, to whom Epping Forest owes much, takes a leading share in the movement for re-afforesting those woodlands. They comprise, besides, a charming piece, about 70 acres, of the ancient forest, near Claybury. Chigwell Manor has been enclosed during a long period, and has not greatly suffered; the south-western portions are well timbered and their pristine state is commemorated by the Roes' Well. A further area of 12 acres at Grange Hill might be secured, and Lord Cowley's trustees will, under conditions, dispose for 150*l.*, of their interests in the two greens, 4½ acres, at Woodford Bridge. The neighbouring population is rapidly increasing: West Ham has 300,000 inhabitants, East Ham has trebled its population to 95,000 in the last ten years, and Ilford counts 41,000 as contrasted with 10,000 in 1891. Leyton and Romford are extending quickly. Stations will be made at Chigwell and Chigwell Row on the Great Eastern Railway new loop line from Woodford to Seven Kings, and there is one at Grange Hill on a new branch of that company's system.

INCORPORATED SOCIETY OF BRITISH DECORATORS.—Before the Glasgow branch of this Society, on the 23rd inst., Mr. James Paton, superintendent of the Museums and Art Galleries, in the Faculty Hall, West George-street, delivered a lecture on "Mosaics in History and Art." After defining and describing the various classes of work to which the name of a mosaic is given, and limiting his attention to pictorial mosaics made up of small cubes of coloured enamel, Mr. Paton said that mosaic is the most powerful decorative medium which has ever come into the hands of the artist. The practice of mosaic working is one of high antiquity which came into extended use at the most interesting stage of human progress, and therefore its history has intimate relation to a subject of the deepest import to mankind, the introduction and the early growth of the Christian religion. Mosaic working is a costly and difficult art, requiring on the part of its successful practitioner very high artistic and technical skill, but when composed and properly fixed a mosaic picture is practically unchangeable and imperishable. The fundamental condition in the employment of a medium so potent, the lecturer pointed out, is that it be used with moderation, sobriety, and reticence, the risk of a mosaic being that it may dazzle more than permanently delight. The historical development and vicissitude of mosaic art were subsequently dealt with, and recent efforts to revive the art, especially on a great scale in St. Paul's Cathedral under the guidance of Sir William Richmond, were alluded to.

THE VALUE OF HOUSES AT HYDE PARK CORNER.—Mr. Under-Sheriff Burchell and a special jury, at Red Lion-square, Holborn, recently heard the case of Elliott's Trustees *v.* the Great Northern and Brompton and Piccadilly Railway Co., a claim for nearly 40,000*l.* compensation in respect of the compulsory sale to the company of the two freehold residences, 6 and 7, St. George's-place, Hyde Park Corner, and for damage done to the adjoining four houses in the same ownership, by the opening of a railway station on the site of the two houses. Mr. Edward Boyle, K.C., and Mr. Courthope-Munroe appeared for the claimants; Mr. Freeman, K.C., represented the railway company. In opening the case, Mr. Boyle said the houses overlooked Hyde Park and afforded a fine view of Rotten-row, and were substantially built and well arranged. They were let on leases at 480*l.* per annum each, or 960*l.*, and were undoubtedly worth a much higher rental as they occupied one of the most fashionable positions in the West End. The rental being so well secured should be capitalised on the 3½ per cent. tables, thirty-one years' purchase, or 29,760*l.*, to which the customary addition of 10 per cent. for compulsory sale should be made, 2,976*l.* bringing the amount for the property actually taken to 32,736*l.* The remaining residences could not fail to be seriously depreciated by the proximity of the tube station, with its noise and smell and crowds of passengers, and in respect of such depreciation about 6,000*l.* was claimed. Witnesses having been examined, a consultation took place between the learned counsel, and the case was settled, it being agreed that the claimants should receive the sum of 30,750*l.* for the freehold of the two houses and all such rights as they possessed over adjacent land shown in the notice to treat. Mr. Douglas Young (vice-president of the Auctioneers' Institute), Mr. Alexander R. Stenning, and Mr. Leslie R. Vigers (members of the Council of the Surveyors' Institution), with Mr. George A. Wilkinson, were among the experts retained for the railway company.

ROCKINGHAM HOUSE, CO. ROSCOMMON.—Some extensive alterations and repairs are being carried out at Rockingham House in preparation for its occupancy as a Viceregal residence by the Lord Lieutenant of Ireland. The estate, formerly the seat of Robert, Lord Lorton, second son of the Earl of Kingston, is situated about two miles distant from Boyle, and extends over 2,000 acres, richly planted, on the south-east side of Lough Key. The mansion is built in the Classic style, after the Ionic Order. The main façade comprises a hexastyle portico, on each side of which is a similar columniation; along the north front is a colonnade of six Ionic columns.

BUILDING SOCIETIES.—There has just been issued as a Parliamentary paper an abstract of the annual accounts and statements of building societies in the

United Kingdom for the year 1901. It is rather a belated report, but, having regard to the mass of figures to be dealt with, the delay is not very surprising. It appears that in England there are 1,859 incorporated building societies making returns to the Chief Registrar, and the aggregate number of members of these societies is 464,986. The total receipts during the last financial year were 16,651,831*l.*; 1,427 societies made advances on mortgage to the extent, during the year, of 7,759,707*l.* The liabilities of the 1,859 societies amounted to 40,128,831*l.* (29,507,083*l.* to holders of shares and 11,621,743*l.* to depositors and other creditors), whilst the assets amounted to 43,546,860*l.*, viz., balance due on mortgage securities (not including prospective interest) 40,407,887*l.*, and amount invested in other securities and cash 3,138,973*l.* Wales has 106 societies making returns, with 22,249 members, whose total receipts during the year were 426,338*l.* Eighty of the societies advanced 199,752*l.* on mortgage during the year. The liabilities of the 106 societies amounted to 1,327,057*l.*, and the assets to 1,406,715*l.* The foregoing figures refer to the incorporated societies, but there are also in England (none in Wales) sixty-six unincorporated societies with 54,219 members, whose total receipts during the year were 17,565,181*l.* Sixty-two of these societies made advances on mortgage during the year to the amount of 715,494*l.* Their liabilities are returned at 13,440,631*l.*, and assets at 14,291,227. By far the largest of the unincorporated societies is the Birkbeck, with 15,129 members, and total receipts during the year of 16,134,126*l.* Taking England and Wales together, 1,759 societies held balances of undivided profit amongst them amounting to 3,432,586*l.*; whilst, on the other hand, 218 societies had deficit balances amounting in all to 143,598*l.* In the County of London there are 452 incorporated building societies, with 111,901 members; in Lancashire, 362 societies, with 66,168 members; in Durham, 106 societies, with 22,764 members; and in Yorkshire, ninety-six societies, with 62,081 members. Scotland has 129 incorporated building societies, with 33,832 members, and total receipts during the year of 623,662*l.*; liabilities, 1,640,280; assets, 1,747,520*l.*; undivided profits, 107,409*l.*; balance deficit of two societies, 169*l.* Ireland has seventy-three incorporated building societies, making returns, with 15,997 members, and total receipts during the year of 549,268*l.*; liabilities, 1,062,513*l.*; assets, 1,144,820*l.*; undivided profits, 82,518*l.*; balance deficit of two societies, 211*l.* The following is a general summary both of incorporated and unincorporated societies for the United Kingdom for the year 1901, the figures for the preceding year being given for comparison in parentheses. Number of societies making returns, 2,233 (2,307). Total number of members, 591,283 (598,329). Total receipts during the last financial year, 35,816,280*l.* (37,771,262*l.*). Number of societies making advances on mortgage, 1,742; amount advanced on mortgage during the year, 9,119,675*l.* Liabilities: to the holders of shares, 36,288,051*l.* (35,701,899*l.*); to depositors and other creditors, 25,371,256*l.* (21,876,204*l.*). Undivided profit, 3,622,513*l.* (3,518,575*l.*). Assets: balance due on mortgage securities (not including prospective interest), 47,866,207*l.* (46,617,643*l.*). Amount invested in other securities and cash 14,211,635*l.* (14,217,937*l.*) Balances deficit, 143,978*l.* (261,098*l.*).

ST. JAMES'S HALL.—We gather that the negotiations for the sale of St. James's Hall are now concluded, and that the property will soon be taken over by a syndicate for the erection of a hotel upon the site. The Hall was established at the instance of Messrs. Chappell & Co., the music publishers, and built by Messrs. Lucas after designs by Owen Jones, who also prepared the scheme of decoration. The cost amounted to 70,000*l.*, as much difficulty was presented by the watery nature of the soil. The Hall was opened on March 25, 1858, by the late Prince Consort. During a long period it has formed the scene of the classical performances which took their name from some "Popular Concerts" which were given there during the "Cattle Show" week of December, 1858. In the *Builder* of October 4 and 18, 1856, will be found illustrations of the interior of the Great Hall, and of the former entrance in Piccadilly; on February 24, 1883, we published a view of the new entrance and front as built of red Mansfield stone and Luton brick, with mosaic work, which with additions and interior improvements were executed under the superintendence of Mr. Walter Emden. Since that period Messrs. Walter Emden & Co. have carried out for the St. James's Hall Company at different times further alterations. The latter works, begun last summer, comprise provisions by way of precaution against fire, an additional scheme of decoration after the Byzantine manner, enlarged lobbies and stairways, and a remodelling of the entrance, with the vestibule, in Regent-street. The restaurant and dinner-rooms were added twenty-eight years ago.

PROPOSED THAMES OVERHEAD RAILWAY.—A project is being formulated for the construction, at an estimated cost of five millions sterling, of an electrical overhead railway above the Thames along its southern side from Barnes bridge to Southwark bridge, somewhat after the system adopted for the Elberfeld Overhead Railway in Prussia, the cars being hung from a double track carried by girders supported by piers resting upon foundations laid in the bed of the river and (in places) in the shore. The promoters of the scheme contemplate the building of stations, with lifts, at the present intervening bridges on the route—the railway bridges excepted, and the construction of a new bridge across the Thames from Pimlico to Nine Elms, and two more bridges from Chelsea to Battersea, with lifts communicating with the proposed railway at each of the three new bridges. The line would thus be between eight and nine miles in length, a distance to be covered in twenty-three minutes, at a uniform fare of 2d. between any two stations. The Elberfeld and Barmen line has been laid over about six miles of the River Wupper, and, it is stated, proves to be a successful venture from both the engineering and financial points of view.

NON-SLIPPING MANHOLE COVER.—The Carlton Iron Foundry Co. send us an illustration and description of a "non-slipping and non-wearable manhole cover" which they have designed in order to do away with the nuisance of borough surveyors and Councils having so frequently to renew the wood blocks in the roadway covers, in some cases as much as every two or three months where the traffic is exceedingly heavy. In place of the wood blocks, they propose specially hardened metal blocks made to such a degree of softness as to prevent slipping, while to avoid concussion when struck by horses' hoofs, a sheet of indiarubber is inserted between the metal blocks and the casting. To prevent the metal blocks from being tampered with, they are fastened underneath with a special eye-bolt and pin, and they can be easily taken out if required. It is claimed for these that they will last the lifetime of the manhole cover, and that in districts where they have the usual traffic they will last as long as any iron-top manhole cover.

"THE LOCAL GOVERNMENT ANNUAL."—The "The Local Government Annual for 1903" is the twelfth issue of a very useful and reliable work. The directory portion gives the names and addresses of the chief officials of all Corporations, London Borough Councils, County Councils, Boards of Guardians, Urban and Rural District Councils, County and Borough Asylums, &c., throughout the kingdom, as well as the public libraries, public parks, and City Companies of London. The names of the Chairmen of Committees in the Metropolitan Boroughs, also the Chairmen and Vice-Chairmen of the London County Council Committees have been inserted, as well as the telegraphic addresses and telephone numbers of all those London Borough Councils which have adopted them. There is also information relating to the public libraries, baths and washhouses, and electric light undertakings in the boroughs of London. The book is sold at 1s. 6d., and is published at 27A, Farringdon-street, E.C.

LEGAL.

ACTION FOR DAMAGES AGAINST A BUILDING OWNER.

THE case of Goldberg *v.* Browne came before Mr. Justice Jelf and a common jury in the King's Bench Division on the 23rd inst.

This was an action for damages by the plaintiff against the defendant, the plaintiff alleging that the defendant, in the execution of certain work in the house adjoining his, damaged his premises, and that by the negligence of her servants and agents she did the work in such a manner as to render plaintiff's premises unsafe. Plaintiff also claimed damages for alleged trespass.

The defendant denied the alleged negligence and trespass, and said that what she did was done in pursuance of a notice from the London County Council. Defendant also counterclaimed against the plaintiff for rent and the cost of pulling down and rebuilding a wall.

Mr. Montague Lush, K.C., and Mr. Hancox appeared for the plaintiff; and Mr. J. Eldon Bankes, K.C., and Mr. Lewis Thomas for the defendant.

From the opening statement of counsel it appeared that the plaintiff was a tenant of the defendant, who was a lady living at Castleton, Mayo, Ireland, who owned considerable property in London. Plaintiff's lease from the defendant was for ten years, commencing September, 1899. Plaintiff was a picture frame maker, and carried on his business at No. 461, Commercial-road. During the plaintiff's occupation the adjoining houses Nos. 463 and 465 were empty. Defendant wanted to make extensive alterations at No. 463, and the work was given to a contractor named Lindsey. He began the work by making an extremely deep and wide trench from the back of this house through the ground floor and so out into the front. This trench was 12 ft. deep and 6 ft. wide, and only 3 ft. from the wall of plaintiff's house. This was a very dangerous operation unless great care were taken, and great care should have been taken to prop and shore up plaintiff's house, but this did not appear to have been done. One morning the plaintiff was seated in his office when he heard a great commotion, and a number of men rushing out from next door in a tremendous hurry. Just afterwards, down came the whole of No. 463, and with it a considerable portion of No. 465. The next thing plaintiff knew was that the contractor was beginning to pull down the party wall between his house and No. 463. Plaintiff protested, but the contractor refused to take the slightest notice of his protests, and pulled down a portion of the outside of plaintiff's house and his chimneys, leaving the house in such a condition that the plaintiff had to pack up and go. The entrance to plaintiff's house was then boarded up, rendering access to his shop impossible. In the beginning of May, plaintiff found that his building was uninhabitable, and he took other premises. After complaining to the defendant, he commenced the present action.

The plaintiff having given evidence in support of counsel's statement,

Mr. Justice Jelf suggested that the parties should endeavour to come to terms and

In the result Mr. Bankes stated that the plaintiff had agreed to accept a sum of money to be paid by the defendant in full satisfaction of all claims on both sides, the plaintiff agreeing to surrender his lease to the defendant.

A juror was accordingly withdrawn.

The terms were not stated in court.

EMPLOYERS' LIABILITY ACT.

QUESTION AS TO CONTRIBUTORY NEGLIGENCE.

JUDGE STONOR, on Monday at Marylebone County Court (London), delivered judgment in the case of Waite *v.* Johnson, the hearing of which was reported in our issue of November 15 last.

The plaintiff in the action was William Waite, bricklayer, 40, St. Margaret's-road, Kensal Rise, N.W., and he claimed 200*l.* damages, under the Employers' Liability Act, from Messrs. J. E. Johnson & Son, builders and contractors, High Cross-street, Leicester, the claim being in respect of personal injuries, said to have been sustained by the plaintiff owing to negligence on the part of the defendants or their servants.

Mr. Chester Jones, counsel, appeared for the plaintiff, and Mr. C. B. Marriott, counsel, for the defendants.

From the evidence, it appeared that the plaintiff met with his accident whilst in the defendants' service on April 29 last, at some building works in Acton-lane, Willesden, N.W. He was working in a hole, and an iron bar, belonging to Helliwell's Patent Glazing people being hoisted by one of the defendants' servants, fell upon him, seriously injuring his back. The jury returned a verdict in favour of the plaintiff, assessing the damages at 238*l.*

Application was subsequently made for a new trial.

His Honour, in delivering judgment, now said: This is a motion for a new trial on the following grounds:—1. That the finding of the jury that the plaintiff did not know the danger of working in the hole near the lift was against the weight of evidence and contrary to the plaintiff's own evidence relative thereto; 2. That the finding of the jury that the plaintiff did not voluntarily and willingly run the danger of working in the hole near the lift was against the weight of evidence and contrary to the plaintiff's own evidence relative thereto; 3. That the damages awarded by the jury to the plaintiff, viz., 238*l.*, was unreasonable and excessive. With regard to the finding of the jury that "the plaintiff did not know the danger" in question, it appears to me that this finding is ambiguous and admits of two constructions—first, that the plaintiff did not know of the danger *at all*; and, secondly, that he did not know of it *fully* or *sufficiently* to estimate it—using the word "know" emphatically—and I think, but with some doubt, that the finding ought to be read in the second sense, especially as there could be no doubt that the plaintiff had *some* knowledge of it, inasmuch as he said in his examination-in-chief, "I thought at the time that the men ought to have been protected against it," and also that he did not complain, for which he did not give any reason, although no doubt afterwards, on being recalled at the end of the case, he suggested a reason, to which I shall presently refer. With regard to the finding of the jury that "The plaintiff did not voluntarily and willingly run the danger" in question, it is to be observed that the issue involved in this finding, which is certainly the main issue in this case, was never raised, or at all events never *distinctly* raised, until the speech of the defendant's counsel after the evidence had been closed. I then permitted the plaintiff to be recalled and further examined, and in answer to the defendant's counsel he said, "Of course I did the work voluntarily, because I did it"—a very natural and a very suggestive answer—but afterwards in answer to his own counsel he said, "I did the work because I knew the foreman would send me off the works if I refused." Now, upon this evidence, and according to the case of "Smith *v.* Baker," H.L. 1891, A.C. 325, I think that the jury were clearly at liberty to find either that the plaintiff, after having had sufficient opportunity of fully ascertaining the danger in question, and also of considering the probability or possibility of loss of employment, in the exercise of his judgment and free will, determined to accept the danger rather than the probable or possible loss of employment, and therefore that he did incur such danger voluntarily and willingly; or that the plaintiff being under fear and pressure did not do this work voluntarily and willingly; and I think that there is no ground for setting aside their verdict, because

they have adopted the latter view; and that, on the authority of the case I have already cited, the verdict ought to stand. With regard to the third ground on which a new trial has been asked, viz., "that the damages awarded by the jury—238*l.*—were excessive," there was no doubt some miscalculation as to the amount, and the plaintiff has consented to reduce the damages to the sum of 200*l.*, and on the evidence and findings of the jury, I cannot say that the damages so reduced are technically excessive. I therefore refuse the motion.

Counsel for the defendant said he desired to have an opportunity of considering his position, and consulting with his clients as to the advisability of appealing. He was quite willing that a portion of the 200*l.*, which the defendants had paid into Court, should be handed over to the plaintiff to go on with for a few weeks, pending an appeal.

His Honour made an order as follows: 25*l.* to be paid out to the plaintiff with taxed costs, plaintiff's solicitor undertaking to return the amount in the event of an appeal being successful; the balance of 175*l.* to remain in Court for twenty-one days, or until further order or the Court.

THEATRICAL BUILDING DISPUTE.

THE case of *in re* an arbitration between Kirk & Randall and Sir Charles Wyndham came before a Divisional Court of King's Bench, composed of the Lord Chief Justice, Mr. Justice Wills, and Mr. Justice Channell, on the 28th inst., on a motion by Sir Charles Wyndham, the actor, to set aside the arbitrator's award in the arbitration between himself and Messrs. Kirk & Randall, the well-known contractors.

Mr. Spencer Bower appeared for Sir Charles Wyndham, and Mr. English Harrison, K.C., and Mr. Clavell Salter for the builders.

Mr. Bower said that this was a motion by Sir Charles Wyndham on an award made in certain matters by Mr. Runtz in October last to set it aside on the ground that at the time Mr. Runtz had no jurisdiction. The learned counsel said that last year Sir Charles was minded to build another theatre in St. Martin's-lane, and, therefore, a contract was entered into with Messrs. Kirk & Randall, and it contained a clause that any difference or dispute as to the withholding of any certificate should be dealt with by a Mr. Goodwyn, and, if he could not serve, by Mr. Runtz. A dispute arose in July or August last year, due to the withholding of a certificate by Mr. Sprague for 2,000*l.* The services of Mr. Goodwyn were requisitioned, but as he was away and the matter was urgent Mr. Runtz was applied to. Mr. Runtz appointed August 26 to hear the parties. Before the day arrived, Sir Charles found that other work had been done, and he consented to the application and paid the amount demanded. Thereupon the arbitration became unnecessary. Then Messrs. Kirk & Randall found that their work had entitled them to another 2,000*l.*, and on September 2 they made formal application for a certificate for 2,000*l.* Kirk & Randall said they would go to Mr. Runtz, but Sir C. Wyndham said that Mr. Goodwyn, who had then returned, was the proper arbitrator. Kirk & Randall said that this was in the nature of a postponement of the original dispute, so that Mr. Runtz, having got jurisdiction over the original dispute, retained jurisdiction over it. The learned counsel contended that it was a fresh dispute. They went to Mr. Goodwyn, and Kirk & Randall, who appeared, protested and retired. He awarded that nothing was due. The other side went to Mr. Runtz, and Sir C. Wyndham's representatives appeared, protested, and retired, and Mr. Runtz awarded the full amount claimed. There was also a motion by Kirk & Randall to set aside Mr. Goodwyn's award, and the one case would depend on the other. The money had long since been paid.

The Lord Chief Justice suggested that the parties should agree on somebody to settle their disputes.

Mr. Bower said that Kirk & Randall were bringing an action against Sir Charles Wyndham, and practically taking possession of the theatre. He would consent to all the disputes being referred to a person to be named by the President of the Institute of Architects.

In the result, it was agreed that the two awards should be set aside, and the matters in dispute referred to an architect and surveyor to be agreed on, or in default, to be nominated by the Court.

APPEAL IN AN ANCIENT LIGHT DISPUTE.

IN the Court of Appeal, composed of the Master of the Rolls and Lords Justices Romer and Cozens-Hardy, on the 27th and 28th inst., the case of Avery & Wolmerson *v.* Lewis came on for hearing, on the appeal of the defendant from a judgment of Mr. Justice Joyce in the Chancery Division, dated March 4 last. The case was fully reported in the issue of the *Builder* of March 8, 1902.

This was a light and air case having reference to premises in the New Cross-road, S.E., the plaintiffs alleging that the new building which the defendant had then recently erected materially diminished the light to two windows at the rear of their premises, such lights being ancient. They claimed a mandatory injunction and damages. The defence was a denial that the plaintiffs' light had been materially or substantially interfered with. The alleged obstruction was to the access of light to two windows in the plaintiffs' offices. The windows were 4 ft. 3 in. in height and 3 ft. in width, and the sill of which was 7 ft. 2 in. from the ground. The windows looked due east, and a little to the south was a high building which obstructed the light to these windows. There was, however, no lateral obstruction, and the light to these windows except by the building to the south was practically unobstructed. The building containing these windows was leased in July, 1887, for a term of sixty years, of which there were about forty-three years still to run, at a rent of 60*l.* a year. In 1892 this lease was assigned to the plaintiffs, a firm of solicitors, who used the room in which the lights mentioned were as the private room of the partners, or one of them. The obstruction the plaintiffs complained of was a building erected by the defendant only 5 ft. 6 in. away from the wall in which the windows in question were placed. Mr. Justice Joyce, after hearing a great deal of expert evidence at the trial, held that there was a sensible and material obstruction to the plaintiffs' two windows, especially the northern one—not very great, but still sufficient to maintain the action. In these circumstances he declined to make a mandatory order, but awarded the plaintiffs 10*l.* damages and the costs of the action. From this decision the defendant now appealed.

Mr. Younger, K.C., and Mr. Jolly appeared for the appellant, and Mr. Hughes, K.C., and Mr. Humphreys for the respondents.

Mr. Younger contended, on behalf of the appellant, that the learned Judge in the Court below should have given judgment for the defendant, as the obstruction was so slight. The learned Judge's finding of fact that the obstruction was sensible or material was contradictory of his estimate of the damages he awarded. If the pecuniary damage the plaintiffs had suffered could be measured by a sum of 10*l.*, they had really suffered no material injury at all. Here the obstruction was 22 deg. only, and the windows which the plaintiffs complained were obstructed were high up in the room, and therefore the obstruction was not nearly so serious as though the obstruction was to a window lower in the room.

Mr. Jolly followed on the same side. He argued that the damages awarded by the learned Judge to the plaintiffs showed that the plaintiffs had suffered no substantial diminution of light to their windows. There must be a certain amount of give and take in these matters, and this Court had held that a plaintiff must not be too fastidious in these matters. The plaintiffs had not been reasonable in the way they had launched their case. They had all along contended that the defendant had no right to take away a single ray of light or a single breath of air from them.

Without calling upon counsel for the respondents the Master of the Rolls in giving judgment said he was of opinion that there was no ground for interfering in this case. The decision was one on a question of fact. Mr. Justice Joyce had had the witnesses before him on both sides. Some of them he did believe, and some he did not. The learned Judge was the best judge of the facts, having had the advantage of seeing the witnesses in the box. He had not said that the damage to the plaintiffs was only nominal or theoretical. He found that it was substantial as distinct from nominal. Having done that he assessed the damages at 10*l.* only; but that did not negative the conclusion he had arrived at. He (the Master of the Rolls) thought that the learned Judge might very well have given the plaintiffs 50*l.* damages, and the defendant was to be congratulated on getting off with only 10*l.* against him. The learned Counsel for the appellant had been unable, in the judgment of the learned Judge, to point to anything which would have been a misdirection if the case had been tried in the King's Bench Division with a jury. It was impossible to get an exact rule as to what constituted "substantial" and what did not. In this case the learned Judge had found that the diminution to the plaintiffs' light was substantial, and he (the Master of the Rolls) could not differ from his conclusion.

The Lords Justices concurred, and the appeal was accordingly dismissed with costs.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

3,543 of 1902.—J. STEWART: *Roof-Light Frames.*

This invention has reference to roof-light frames such as are fitted with hinged sashes, and the object of the invention is to secure a rain and snow proof joint between the sash and the frame. The invention is carried into effect by forming the roof-light frame—otherwise much of the usual construction—with a turned-over edge or flange all round the upper edge of its vertical flange on which the sash rests. This turned-over edge or flange is preferably flat on its upper surface for the sash to rest on, and has a slightly angled or bevelled outer rim to make a tight joint with the bevelled edge of sash frame. The groove is preferably formed in the under side of the flange all round to intercept any rain or snow which may be blown against the vertical flange of the frame, and so prevent it being carried by the wind through the meeting joint of sash and frame. The sash is preferably hinged to brackets formed on the frame at its upper end so as to open easily, and is also fitted with the ordinary opening lever or handle.

3,736 of 1902.—C. E. DOULD: *Construction of Draught Preventer.*

A draught preventer for doors, windows, and the like, whereby on the shutting of the door or window, action is made upon a nose for forcing a strip of flexible material out from the door or window to press upon the floor jamb or stile and close the opening between same.

3,877 of 1902.—W. TAYLOR: *Catch for Securing Folding Doors.*

This invention relates to a catch for securing one of a pair of folding-doors, and automatically releasing same when the other door is opened. It is intended to be applied to the door (or half-door) which is not provided with the lock (usually the left-hand door), and is applicable to the doors of cabinets, bookcases, and other like double doors. It consists of a box fitting which is let into the edge of the door, and supports horizontally a pivotted S-shaped catch, one end of which projects inward and the other end projects beyond the edge of the door as a rounded projection. Within the box is a spring having the tendency of drawing the engaging end of the catch out of connexion with the catch-plate, which is secured to the body of the cabinet or other article. When the door with the catch is pushed to, the hooked end of the catch enters the opening in the catch-plate but does not engage, but when the other door is being closed it comes in contact with the rounded projection of the catch before mentioned, turns it upon its pivot and causes the hook to engage, and retains it in that position until it is reopened, when the spring immediately causes the catch to disengage.

5,896 of 1902.—C. D. ABEL (Deutsche Steinzeugwarren Fabrik für Canalisation und Chemische Industrie, of Friedrichsfeld): *Stop Cock.*

This consists in the combination with a metal outer casing or barrel of a lining piece of earthenware in which is fitted an earthenware plug, so that the part in which the plug works is proof against acids and the like, and is protected by a strong outer casing of metal.

11,854 of 1902.—C. HART: *Pivot Hinges for Use on Closet Seats.*

A pivot hinge for use on closet seats, consisting of an outer part comprising a horizontal plate to be screwed on to the back rail of the seat; a vertical, upwardly-projecting cheek at the outer edge, with a pivot horizontally projecting from the inner surface of said cheek; an inner part to be screwed on the upper surface of the lid, having a vertical cheek extending downwards from the outer edge and provided with an opening in the centre for the passage of the pivot and of a centre piece screwed on the upper surface of the seat, having a vertical cheek extending upwards from its outer edge, with an opening in the centre for the passage of the pivot.

9,407 of 1,902.—W. SMITH and J. SMITH: *Gas Heating Apparatus for Heating Rooms, Cooking, and the like.*

A burner for gas-heating apparatus, having horizontal coils in which the gas and air are mixed and pass to the burning nozzles, a box or case for the admission of air, projecting from the burner, and having a sliding door over its end, and a gas supply cock or valve within it, the operating part or arm of which is adapted to be operated by the said door.

25,028 of 1902.—A. KEMPER and F. DAMHORST: *Water Heating Apparatus.*

A water heating apparatus consisting of a principal heater having a narrower cylindrical upper portion, a cap-shaped feed-heater or preliminary heater fitted over the said upper portion, and a suitable burner, the gases for which flow over the walls of the heater from the inside to the outside.

3,516 of 1902.—F. J. FARRELL: *Apparatus for Softening Water.*

This consists in the combination of a pair of tanks for measuring the softening solution, of a pair of tanks for measuring the water, of a rocking arm adapted to be actuated by floats in the water measuring tanks, of a free ball or weight adapted to slide on the said rocking arm, of a compound cock connecting the two solution measuring tanks with both the supply for the reservoir and the discharge-pipe, of means for operating the said cock by the oscillations of the rocking arm, of a deflector adapted to divert both the flow of water from the source of supply and the flow of softening solution into one or other of the water measuring tanks, of means for operating the said deflector by the oscillations of the rocking arm, and of valves in the water measuring tanks connected directly or indirectly with the rocking arm so that they are opened and closed by its oscillations.

18,773 of 1902.—J. S. REEKIE: *Spigot and Socket joints.*

Spigot and socket joints for pipes, consisting in

* All these applications are in the stage in which opposition to the grant of a Patent upon them can be made.

forming pipes with a continuous lead ring or collar of suitable shape cast or otherwise tightly fixed upon the spigot end, so as to make a tight joint between the socket and the inner end of the spigot.

22,349 of 1902.—A. DE MAN: *Pavement Lights.*

A vault light in which a self-sustaining concrete slab contains embedded diverging lenses, the invention consisting in the arrangement of each lens having a hollow extension at its underside, the opening of the extension increasing in size towards the bottom, the top of the lens being so constructed relative to the extension opening that the downward rays emerging from the inner face of the top will pass in diverging beams through the extension opening, the extension having prismatic ribs in step form and running crosswise of the axis of the lens at the inner surface of the extension walls.

24,608 of 1902. — H. J. HADDAN (J. H. WELSENAAR, P. H. ROMEYN, and A. A. J VERKERK): *Tiled Roofs.*

This invention relates to a method of rendering tight, roofs covered with flat or curved tiles. The principal feature of the invention consists in the arrangement of a support of metal, wood, or other suitable material under the butt joints of the tiles, the said support being adapted to hold or contain suitable material for rendering the roof water-tight, such as mortar, cement, and the like. For curved roof tiles, of which hitherto only one edge rests on the roof, these supports are bed or trough-like, and form at the same time a support for the otherwise unsupported edges of the tiles. The supports either correspond with the length of the tiles, and are arranged in steps, or they are connected to each other to form a step-shaped frame or body, which can reach from the ridge to the gutter.

13,561 of 1902.—A. E. WOODS: *Draught, Dust, and Weather Excluder, and Door or Window Wedge.*

A draught, dust, and weather excluder, and door or window wedge, consisting of a device formed of a V-section, and with or without a flange along the edge of one or both of its jaws for the purpose of being supported and fixed to the door or window.

MEETINGS.

FRIDAY, JANUARY 30.

Royal Institution.—Professor W. E. Dalby, M.A., on "Vibration Problems in Engineering Science," 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. J. R. MacIntosh on "The Design of the Electrical Equipment of a Light Railway." 8 p.m.

SATURDAY, JANUARY 31.

Incorporated Association of Municipal and County Engineers. — Midland District Meeting, Birmingham. Papers on "The Ventilation of Sewers and Drains."

Builders' Foremen's Association (Memorial Hall Farringdon-street).—Annual meeting. Mr. E. Trent on "Constructional Ironwork as Applied to Buildings." 8.15 p.m.

MONDAY, FEBRUARY 2.

Royal Institute of British Architects.—Seventh general meeting (ordinary): 1. To announce the name of the person the Council propose to submit as a fit recipient of the Royal Gold Medal, 1903. 2. To hear an address to students by Mr. Aston Webb, A.R.A., F.S.A., President; and a criticism of the designs and drawings submitted for the prizes and studentships 1902-1903, by Mr. Walter Millard. 3. At the conclusion of the above the presentation of prizes will be made by the President. 8 p.m.

London Institution.—Mr. E. W. Maunder on "The Royal Observatory, Greenwich," illustrated. 5 p.m.

Society of Arts (Cantor Lectures).—Mr. Julius Hübner on "Paper Manufacture."—I. 8 p.m.

Society of Engineers.—The President for the past year, Mr. Percy Griffith, will present the premiums awarded for papers read during the year. 2. The President for the year 1903, Mr. J. Patten Barber, will deliver his inaugural address. 7.30 p.m.

Liverpool Architectural Society.—1. Special meeting to consider and approve the revised schedule of charges, clauses 20 *et seq.* 2. Ordinary meeting: Mr. J. Smithies on "Decorated Metal Work," illustrated by examples. 6 p.m.

TUESDAY, FEBRUARY 3.

Institution of Civil Engineers. — Discussion on the papers—"The Nile Reservoir, Assuan," by Mr. M. Fitzmaurice, and "Sluices and Lock-gates of the Nile Reservoir, Assuan," by Mr. F. W. Scott Stokes. 8 p.m.

Society of Arts (Applied Art Section).—Mr. D. Cockerell on "Technical Education in Connexion with the Book-producing Trades." 4.30 p.m.

Royal Victoria Hall, Waterloo-road, S.E.—Mr. Howard on "Garden Cities." 8.30 p.m.

Glasgow Architectural Association.—Smoking concert. 8 p.m.

WEDNESDAY, FEBRUARY 4.

Royal Archæological Institute.—Mr. A. C. Fryer, F.S.A., on "Fonts with Representations of the Holy Eucharist and Baptism." 4 p.m.

Society of Arts.—Mr. W. L. H. Hamilton on "Methods of Mosaic Construction." 8 p.m.

Institute of Sanitary Engineers, Ltd.—Special meeting of the Council. 7 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Edinburgh Architectural Association. — Mr. A. Hunter Crawford on "The Building of a House." II. Illustrated. 8 p.m.

Northern Architectural Association. — Mr. Allan Greenwell, F.G.S., on "Bitumen; its Application in Architecture and Engineering," with lantern illustrations. 7.30 p.m.

Institution of Civil Engineers.—Students' visit to the Electrical Standards Laboratory of the Board of Trade, 8, Richmond-terrace, Whitehall, S.W.

THURSDAY, FEBRUARY 5.

Institution of Electrical Engineers.—Adjourned discussion on the Metric System. 8 p.m.

Architectural Association of Ireland (Technical Demonstrations).—No. IV.: Conversion of timber, at the works of Messrs. T. & C. Martin. 3.30 p.m.

FRIDAY, FEBRUARY 6.

Architectural Association. — Paper by Professor G. Baldwin Brown, M.A., entitled: "What is the Real Value of Greek Work to the Modern Artist?" 7.30 p.m.

Royal Institution.—Right Hon. Sir H. Maxwell, Bart., on "George Romney and his Works." 9 p.m.

Institution of Junior Engineers (at the Westminster Palace Hotel).—Mr. W. Garnet Wernham on "Calorimetry." 8 p.m.

Birmingham Architectural Association. — Paper by Mr. J. S. Gibson.

SATURDAY, FEBRUARY 7.

Sanitary Inspectors' Association.—Twentieth Annual Dinner, Venetian Chamber, Holborn Restaurant. 6.30 p.m.

The Craft School (137, Globe-road, Bethnal Green).—Miss C. E. Collet on "The Occupations of our Great Grandmothers." 8.30 p.m.

British Institute of Certified Carpenters.—Visit to the London-wall Estate Buildings. 3 p.m. After which the monthly meeting will be held in the Carpenters' Hall at 6 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 14.—By VICTOR VAUGHAN (at Camden Town).

Kentish Town.—107, Weedington-rd., u.t. 59½ yrs., g.r. 7*l.*, y.r. 35*l.*	£315
Holloway.—386, Camden-rd., u.t. 39½ yrs., g.r. 12*l.* 10s., e.r. 80*l.*	598

By H. J. WAY & SON (at Newport).

Newport, Isle of Wight.—Ryde-rd., Odessa, residence, with shipwright's yard adjoining, area 2,700 ft., f., y.r. 18*l.*	400
Ryde-rd., four freehold houses, w.r. 32*l.* 10s.	260

January 15.—By WALTER LUDLOW & BRISCOE (at Birmingham).

Olton, Warwick.—St. Bernard's-rd., Olton Court and 13 a. 3 r. 38 p., f., p.	7,100
St. Bernard's-rd., a freehold building estate, 14 a. 3 r. 3 p., p.	2,500

January 19.—By THOMAS, PEYER, & MILES.

Bradford-on-Avon, Wilts.—The Bravon Brewery, with twelve tied houses, &c., f.	20,200

January 20.—By H. J. BROMLEY.

Sydenham.—14 to 26 (even), Prospect-rd., u.t. 63 yrs., g.r. 12*l.* 10s., w.r. 132*l.* 10s.	970

By FIELD & SONS.

Peckham.—63 to 73 (odd), Acorn-pl., u.t. 52½ yrs., g.r. 10*l.* 15s., w.r. 157*l.* 6s.	1,080
14, 15, and 16, Upper Hall-st., u.t. 59 yrs., g.r. 13*l.* 4s., w.r. 93*l.* 12s.	560
5 and 6, St. George's-ter., u.t. 23 yrs., g.r. 9*l.*, w.r. 83*l.* 4s.	370

By NOTLEY & CO.

Balham.—Hazelbourne-rd., f.g.r. 28*l.*, reversion in 94 yrs.	675
Hazelbourne-rd., a plot of freehold building land	430
Westlands-rd., f.g.r. 6*l.*, reversion in 76 yrs., together with a plot of freehold land	250

By FOX & FERGETTE (at King's Lynn).

Stow Bardolph, Norfolk. — Fen and Widders Farms, 367 a. 1 r. 32 p., f.	12,100

January 21.—By ALLAN BOOTH.

Kilburn.—Kilburn Park-rd., f.g.r.'s 88*l.*, reversion in 74½ yrs.	2,275
Somers Town.—43 and 44, Barclay-st., u.t. 17½ yrs., g.r. 8*l.* 8s., w.r. 63*l.*	350

By FOSTER & CRANFIELD.

Notting Hill.—Ladbroke-rd., The Ladbroke Arms p.-h., profit rentals of 105*l.* for 19¾ yrs.	1,190

By DOUGLAS YOUNG & CO.

Commercial-rd. East.—Nos. 751 and 753 (S), f., y.r. 70*l.*	1,680
Battersea.—86 and 88, St. John's Hill (S), u.t. 92 yrs., g.r. 40*l.*, y.r. 140*l.*	1,100

By N. EASTON & SON (at Louth).

Louth, Lincs.—Louth Park Estate, 367 a., f., p.	9,125

January 22.—By DANIEL WATNEY & SONS.

Westminster.—18, 19, and 20, Marsham-st. (shop, houses, yard, and stabling), area 9,300 ft., f., y.r. 105*l.*	3,000

By H. J. BLISS & SON.

Holborn.—10, Leather-lane (S), and 3, Robin-hood-yard (stabling and workshops), f., w.r. 175*l.* 10s.	2,290
Old Kent-rd.—2 to 24 (even) and 27, Brymer-rd., u.t. 79½ yrs., g.r. 97*l.* 10s., w.r. 691*l.* 12s.; also 50 and 52, Longcroft-rd., u.t. 79½ yrs., g.r. 17*l.*, w.r. 107*l.* 18s.; and 1 to 19 (odd), Victory-pl., u.t. 42¾ yrs., g.r. 50*l.*, w.r. 288*l.* 12s. (in one lot)	5,620

By CHESTERTON & SONS.

Kensington.—14, Vicarage-gdns., u.t. 50½ yrs., g.r. 11*l.* 10s., e.r. 115*l.*	1,100

By C. C. & T. MOORE.

Hackney-rd.—No. 253, f., y.r. 50*l.*	1,210
Southwark.—37 to 45 (odd), Thurlow-st., u.t. 11 yrs., g.r. 16*l.* 12s., w.r. 154*l.* 14s.	450
Edgware-rd.—30, Molyneux-st., f., w.r. 77*l.* 7s.	760

By NEWBON, EDWARDS, & SHEPHARD.

St. Pancras.—4 to 10, Burton-cres., u.t. 31 yrs., g.r. 15*l.*, y.r. 220*l.* 10s.	400
Hackney-rd.—Holm-st., f.g.r. 16*l.* 6s., reversion in 20½ yrs.	650
Holm-st., f.g.r. 11*l.* 4s., reversion in 22½ yrs.	490
Stratford.—Broad-st., f.g.r. 21*l.* 15s., reversion in 62 yrs.	£535
Canning Town.—Tucker-st., f.g.r. 30*l.*, reversion in 66 yrs.	575
Greenwich.—Dutton-st., f.g.r. 23*l.*, reversion in 96½ yrs.	575

By STIMSON & SONS.

Islington.—5 and 15, Dagmar-ter., u.t. 43 yrs., g.r. 12*l.* 12s., w.r. 170*l.* 6s.	860
Clapton.—1, Gilpin-rd., and 45, McLaren-st. (S), u.t. 79 yrs., g.r. 18*l.*, y.r. 89*l.* 4s.	475
Southwark.—Law-st., l.g.r. 50*l.*, u.t. 16½ yrs., g.r. 23*l.* 10s.	225
Old Kent-rd.—No. 412, u.t. 24¾ yrs., g.r. 11*l.*, e.r. 60*l.*	360
Stockwell.—8, Andalus-rd., u.t. 72 yrs., g.r. 6*l.*, q.r. 30*l.*	305
Forest Hill.—24, Agnew-rd., u.t. 95 yrs., g.r. 6*l.* 6s., y.r. 33*l.*	310
Wandsworth.—Nursery-st., l.g.r. 20*l.*, u.t. 24½ yrs., g.r. 5*l.*	210
Beckenham.—7 to 13 (odd), Clock House-rd., u.t. 87 yrs., g.r. 28*l.*, y.r. 140*l.*	1,270

By S. WALKER & SON (at Brighton).

Brighton.—6, Alfred-rd., f., y.r. 65*l.*	828

January 23.—By FRITH, GARLAND, & CO.

Harringay.—121, Hewitt-rd., u.t. 94½ yrs., g.r. 7*l.*, y.r. 33*l.*	380
85, Seymour-rd., u.t. 94 yrs., g.r. 8*l.*, e.r. 42*l.*	400
131, Wightman-rd., u.t. 89 yrs., g.r. 7*l.*, e.r. 42*l.*	420
Hornsey.—54, Hampden-rd., u.t. 78½ yrs., g.r. 7*l.* 10s., e.r. 38*l.*	350
Wood Green.—22, Frome-rd., u.t. 98 yrs., g.r. 7*l.*, y.r. 32*l.*	305

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	14	0	per 1,000 alongside, in river.		
Rough Stocks and Grizzles	1	11	0	,,	,,	,,
Facing Stocks	2	12	0	,,	,,	,,
Shippers	2	5	0	,,	,,	,,
Flettons	1	7	6	,,	at railway	depôt.
Red Wire Cuts	1	12	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	3	0	0	,,	,,	,,
Best Blue Pressed Staffordshire	4	5	0	,,	,,	,,
Do. Bullnose	4	11	0	,,	,,	,,
Best Stourbridge Fire Bricks	4	8	0	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	13	0	0	,,	,,	,,
Headers	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	17	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamfered, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers and Headers	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays Chamfered, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,		less than best.
Thames and Pit Sand		7	0	per yard, delivered.		
Thames Ballast		6	0	,,	,,	
Best Portland Cement		30	0	per ton, delivered.		
Best Ground Blue Lias Lime		21	0	,,	,,	

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 10s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s.	d.			
Ancaster in blocks	1	11	per ft. cube, deld. rly. depôt.		
Bath ,,	1	7	,,	,,	
Farleigh Down Bath	1	8	,,	,,	
Beer in blocks	1	6	,,	,,	
Grinshill ,,	1	10	,,	,,	
Brown Portland in blocks	2	2	,,	,,	
Darley Dale in blocks	2	4	,,	,,	
Red Corsehill ,,	2	5	,,	,,	
Closeburn Red Freestone	2	0	,,	,,	
Red Mansfield ,,	2	4	,,	,,	

[*See also page 127.*

COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
Designs for University Buildings, Cape of Good Hope...	Agnt.-Gen. for Cape of Good Hope	400*l.*, 200*l.*, 100*l.*	Jan. 31
*Infectious Diseases Hospital	Chelmsford Joint Hospital Board...	25*l.* and 10*l.*	Mar. 31
*Proposed Technical School	Blackpool Corporation	60*l.*, 25*l.*, and 10*l.*	April 14
*Public Free Library	Fenton U.D.C.	60*l.* and 30*l.*	April 30
*Alterations and Additions to Victoria Hall	Sunderland Corporation	100*l.*, 50*l.*, and 25*l.*	do.
*Proposed New Hospital	Manchester, &c. Hosp., Skin Diseases	75*l.*, 50*l.*, and 25*l.*	do.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
Additions, &c., to Stoke School	Devonport School Board	Hine & Odgers, Architects, Lockyer-street, Plymouth	Feb. 3
Kerbs, &c.	Leyton (Essex) U.D.C.	W. Dawson, Civil Engineer, Town Hall, Leyton	do.
Esplanade Works, Newburn Bridge	West Hartlepool Corporation	J. W. Brown, Borough Engineer, West Hartlepool	do.
Seven Houses, Grafton-street, Barnsley	.....	Wade & Turner, Architects, 10, Pitt-street, Barnsley	do.
House, St. John's-road, Birkby	.....	J. H. Hall, Architect, Milton-place, Fartown	do.
*Footpath Paving Works, Wealdstone	Middlesex County Council	County Engineer, Middlesex Guildhall, S.W.	do.
Ten Houses, Ovenden, Yorks	.....	M. Hall, Architect, 29, Northgate, Halifax	Feb. 4
Club Premises, Newsham, Northumberland	.....	J. Goulding, Architect, Blyth	do.
Vestry, &c., Pricetown, Nantymoel	Congregational Ministers	H. B. Davies, 12, Commercial-street, Nantymoel	do.
Additions to School, Leith-walk	Edinburgh School Board	Mr. Carfrae, Architect, 3, Queen-street, Edinburgh	do.
Workshop, Sculcoates	Kingston Railway Waggon Co., Ltd.	T. B. Simpson, Architect, Custom House Buildings, Hull	do.
Bridge Works, Long Benton	Tynemouth R.D.C.	J. Waters, Surveyor, Long Benton, Newcastle	do.
Additions to Branch Library	Handsworth U.D.C.	The Surveyor, Council House, Handsworth	do.
Sewers	Burton-on-Trent Corporation	G. T. Lynam, Borough Engineer, Town Hall, Burton-on-Trent	do.
Road Metal, &c.	Isle of Ely County Council	H. F. Simpson, Civil Engineer, Wisbech	Feb. 5
Schools, Park-lane	Tipton School Board	A. Long, Architect, 21, New-street, West Bromwich	do.
Sinking Six Shafts at Docks	Swansea Harbour Trustees	A. O. Schenk, Civil Engineer, Harbour Offices, Swansea	do.
Altering Clare Hall into Two Houses, Halifax	.....	R. Horsfall & Son, Architects, 22A, Commercial-street, Halifax	do.
School, Haworth, Yorks	.....	T. Bottomley, Architect, 16, Prince-street, Haworth	do.
Hall and Schools, Denby Dale, Yorks	.....	G. Moxon, Architect, 26, Church-street, Barnsley	do.
House and Stables, Lockwood	.....	J. B. Abbey & Sons, Architects, 34A, New-street, Huddersfield	Feb. 6
Police Station, &c., Pleasant-street	Swansea Corporation	Borough Surveyor, 13, Somerset-place, Swansea	do.
*Coast Guard Buildings, Isle of Wight	The Director of Works	Superintending Engineer, Portsmouth Dockyard	do.
Police Station, &c., Caergwre	Flintshire County Council	J. H. Davies & Sons, Architects, 14, Newgate-street, Chester	Feb. 7
Twenty Houses, Cefn Cribbwr, near Bridgend	Building Club	J. & F. J. Hurley, Architects, 10, Bridgend-road, Tondu, Glam.	do.
Additions to Hospital, Baddow-road	Chelmsford Joint Hospital Board...	A. S. Duffield, 96, High-street, Chelmsford	do.
Water Supply Works, Misterton, Somerset	Chard R.D.C.	C. Combes, Engineer, Tisbury, Wilts	do.
Sewerage Works	do.	do.	do.
Water Supply Works, Shantallow	Londonderry R.D.C.	M. A. Robinson, Civil Engineer, Richmond-street, Londonderry	do.
Police Station, Caergwre	Flintshire County Council	J. H. Davies & Sons, Architects, 14, Newgate-street, Chester	do.
Road Metal, &c.	Chelmsford Corporation	P. J. Sheldon, Civil Engineer, Chelmsford	do.
Cemetery Works, Claudy, Ireland	Londonderry R.D.C.	M. A. Robinson, Civil Engineer, Richmond-street, Londonderry	do.
House, &c., Reynolton, Pembrokeshire	.....	J. P. James, Architect, Tenby	do.
Cast Iron Mains (1,500 tons)	Edinburgh and Leith Corporation.	W. R. Herring, Engineer, New-street Works, Edinburgh	Feb. 9
*Annual Contracts	Borough of St. Pancras	Borough Engineer, Town Hall, Pancras-road, N.W.	do.
Road Works, Boundary-road West	Barking (Essex) U.D.C.	C. F. Dawson, Civil Engineer, Public Offices, Barking	Feb. 10
Additions to Workhouse	Newton Abbot (Devon) Guardians	S. Segar, Architect, Union-street, Newton Abbot	do.
*Annual Contracts	County Borough of West Ham	Borough Engineer's Office, Town Hall, Stratford, E.	do.
*Engine Room Stores	do.	Boro'Elec. Engineers Office, Central Elec. Stn., Abbey Mills, West Ham.	do.
*New Books	do.	Central Public Library, Romford-road, Stratford, E.	do.
*Meat, Bread, Flour, &c.	do.	Medical Superintendent, Council's Hospital, Western-road. Plaistow	do.
*Boiler House, &c. and Union Infirmary	Epsom Union	H. D. Searle-Wood, 157, Wool Exchange, Coleman-street, E.C.	do.
*Making-up Woodlawn-road	Borough of Fulham	Borough Surveyor, Town Hall, Fulham, S.W.	Feb. 11
*Supply of Materials and Execution of Works	Battersea Borough Council	Borough Surveyor, Lavender Hill, S.W.	do.
Gasholder and Tank	Henley-in-Arden Gas Co.	J. W. Lord, Gas Offices, Henley-in-Arden	do.
Surveyor's Materials, Ormskirk	West Lancashire R.D.C.	C. Law-Green, Civil Engineer, Wigan-road, Ormskirk	do.
*Removal of Dust, &c., from Houses, Regent's Park	Crown Estate Paving Commissioners	Lodge, Park Square West, Regent's Park, N.W.	do.
*Annual Contracts	Borough of Hammersmith	Borough Surveyor, Town Hall, Broadway, Hammersmith, W.	do.
Four Boreholes, Otterbourne	Southampton Corporation	W. Matthews, Civil Engineer, 18, French-street, Southampton	Feb. 12
Alterations to Ravensdeane, Edgerton, nr. Huddersfield	.....	J. Kirk & Sons, Architects, Huddersfield	do.
*Public Underground Convenience, Kingsland High-st...	Hackney Borough Council	Borough Engineer, Town Hall, Hackney, N.E.	do.
*Generating Station, &c.	Leicester Corporation	Engineer, Town Hall, Leicester	Feb. 13
*Enlargement of Oxford Head Post Office	Commissioners of H.M. Works	H.M. Office of Works, Storey's Gate, S.W.	do.
Reservoir, Bamford, Derby	Chapel-en-le-Frith R.D.C.	Sterling & Swann, Engineers, Town Hall, Chapel-en-le-Frith	Feb. 14
School, Biggleswade	.....	Townsend & Fordham, Architects, Cross-street, Peterborough	Feb. 16
*Supply of Materials, &c., for one year	Hendon U.D.C.	Council's Surveyor, Public Offices, Hendon, N.W.	do.
*Pipe Sewer, South-place-mews	Corporation of London	Engineer to the Corporation, Guildhall, E.C.	Feb. 17
*Annual Contracts	Acton District Council	Surveyor to the Council, 242, High-street, Acton, W.	do.
Granite Road Metal	Long Sutton (Lincs) U.D.C.	S. S. Mossop, Council Offices, Long Sutton	do.
Road Improvement Works, Trough Brook Hill	Derby Corporation	County Surveyor, Derby	Feb. 18
*Alterations to Laundry at the Infirmary	Parish of Lambeth	Guardians' Board Room, Brook-street, Kennington, S.E.	do.
*Boundary Walling	Borough of Hove	Borough Surveyor, Town Hall, Hove	do
*Electric Lighting of Town Hall Extension	Southwark Borough Council	Borough Engineer, 81, Borough-road, S.E.	do.
*New Post Office, Burton-on-Trent	Commissioners of H.M. Works	H.M. Office of Works, Storey's Gate, S.W.	Feb. 19
*Supply of Road Materials, Stores, Forage, &c.	Woolwich Borough Council	Borough Engineer, Maxey-road, Plumstead	do.
*Chimney and Main Flue at Electric Supply Works	Wallasey U.D.C.	Council's Engineer, Great Float, near Birkenhead	do.
*Erection of School	Crayford School Board	C. L. Morgan, Architect, 43, Cannon-street, E.C.	Mar. 2
*Supply of Road Materials	Middlesex County Council	County Engineer, Middlesex Guildhall, Westminster	Mar. 3
*Cartage of Road Materials	do.	do.	do.
Business Premises, Lancaster	Messrs. W. Atkinson	Austin & Paley, Architects, Lancaster	No date
Alterations to House, Montpellier Parade, Harrogate...	Mr. R. Ackrill	Whitehead & Smetham, Architects, Albert-street, Harrogate	do.
House, Sully, Wales	.....	Teather & Wilson, Architects, Queen-street, Cardiff	do.
Additions to Wesleyan Church, Nottingham	.....	A. E. Lambert, Architect, 22, Park-row, Nottingham	do.
Thirteen Pairs of Houses, Long Eaton	.....	F. H. Collyer, Architect, 8, Bridlesmith Gate, Nottingham	do.
Ten Cottages, &c., Whittington Moor, nr. Chesterfield..	.....	W. M. Ashmore, Architect, Highfield-road, Chesterfield	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Required.	Salary.	Application to be in
*Inspector of Sewers	Corporation of London	200*l.* per annum	Feb. 19
*Architectural Draughtsman	Coventry Corporation	Not stated	No date.
*Assistant Surveyorship of Buildings	Com'ls'ners of Public Works in Ireland	200*l.*	do.

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts*, iv. vi. viii. & x. *Public Appointments*, xvi.

PRICES CURRENT (*Continued*).

STONE.

	s. d.	
YORK STONE—*Robin Hood Quality.*		
Scappled random blocks 6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 10	per ft. cube, deld. rly. depôt.
6 in. Rubbed two sides Ditto, Ditto	2 6	,, ,,
3 in. Sawn two sides slabs (random sizes)	0 11½	,, ,,
2 in. to 2½ in. Sawn one side slabs (random sizes)	0 7½	,, ,,
1½ in. to 2 in. ditto, ditto	0 6	,, ,,
BEST HARE YORK— Scappled random blocks 6 in. sawn two sides, landings to sizes (under 40 ft. sup.)	3 0	per ft. cube ,,
6 in. Rubbed two sides Ditto	2 8	per ft. super. ,,
3 in. sawn two sides slabs (random sizes)	—	,, ,,
2 in. self-faced random flags	1 2	,, ,,
Hopton Wood (Hard Bed) in blocks	0 5	,, ,,
,, ,, ,, 6 in. sawn both sides landings	2 3	per ft. cube. deld. rly. depôt.
,, ,, ,, 3 in. do.	2 7	per ft. super. deld. rly. depôt.
,, ,, ,, 3 in. do.	1 2½	,, ,,

SLATES.

in. in.	£ s. d.	
20 X 10 best blue Bangor	13 2 6	per 1000 of 1200 at ry. dep.
20 X 12 ,, ,, ,,	13 17 6	,, ,,
20 X 20 best seconds ,,	12 15 0	,, ,,
20 X 12 ,, ,, ,,	13 10 0	,, ,,
16 X 8 best ,,	7 0 0	,, ,,
20 X 10 best blue Portmadoc	12 5 0	,, ,,
16 X 8 best blue Portmadoc	6 0 0	,, ,,
20 X 10 best Eureka unfading green	15 0 0	,, ,,
20 X 12 ,, ,,	16 10 0	,, ,,
18 X 10 ,, ,,	11 10 0	,, ,,
16 X 8 ,, ,,	8 7 6	,, ,,
20 X 10 permanent green	10 10 0	,, ,,
18 X 10 ,, ,,	9 0 0	,, ,,
16 X 8 ,, ,,	6 5 0	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1,000, at rly. depôt.
Hip and valley tiles	3 7	per doz. ,, ,,
Best Broseley tiles	50 0	per 1,000 ,, ,,
Do. Ornamental Tiles	52 6	,, ,, ,,
Hip and valley tiles	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	37 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3 0	,, ,, ,,
Best Red or Mottled Staffordshire Do (Peakes)	51 9	per 1,000 ,, ,,
Do. Ornamental Do.	54 6	,, ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles	3 8	,, ,, ,,
Best "Rosemary" brand plain tiles	48 0	per 1,000 ,, ,,
Do. Ornamental Do.	50 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3 8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15 10 0	16 10 0
Deals: best 3 by 9	14 10 0	15 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	,, ,, ,,
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	9 10 0
2 in. by 4½ in. and 2 in. by 7 in.	8 10 0	9 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	,,
Fir timber: Best middling Danzig or Memel (average specification	At per load of 50 ft. 4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 18 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0
JOINERS' WOOD.	At per standard.	
White Sea: First yellow deals, 3 in. by 11 in.	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
,, ,, 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 10 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:— First white deals, 3 in. by 11 in.	14 10 0	15 10 0
,, ,, 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals 3 in. by 11 in.	13 10 0	14 10 0
,, ,, ,, 3 in. by 9 in.	12 10 0	13 10 0
,, ,, ,, battens	9 10 0	10 10 0
Pitch-pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £ s. d.	£ s. d.
Yellow Pine—First, regular sizes	33 0 0	upwards.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 4 6
Danzig and Stettin Oak Logs—Large, per ft. cube	0 2 6	0 3 6
Small ,, ,,	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¾ in. do. do.	0 0 6½	- - -
Dry Mahogany— Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 10 0	20 0 0
American Whitewood Planks— Per ft. cube	0 4 0	- - -
Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 1 6
1 in. by 7 in. white, planed and shot	0 11 6	0 13 6
1 in. by 7 in. white, planed and matched	0 12 0	0 14 0
1¼ in. by 7 in. white, planed and matched	0 14 6	0 16 6
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0 11 0	0 13 6
1 in. by 7 in. do. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

In London, or delivered Railway Vans, per ton.

	£ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders ,, ,,	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Flitch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6	8 5 6

METALS.

	Per ton, in London £ s. d.	£ s. d.
IRON—		
Common Bars	7 15 0	8 5 0
Staffordshire Crown Bars, good merchant quality	8 5 0	8 15 0
Staffordshire "Marked Bars"	10 10 0	- - -
Mild Steel Bars	9 0 0	9 10 0
Hoop Iron, basis price	9 5 0	9 10 0
,, ,, galvanised	16 0 0	- - -

(* And upwards, according to size and gauge.)

Sheet Iron, Black.— Ordinary sizes to 20 g.	10	0 0	- - -
,, ,, to 24 g.	11	0 0	- - -
,, ,, to 26 g.	12	10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes 6 ft. by 2 ft. to 3 ft. to 20 g.	13	15 0	- - -
,, ,, 22 g. and 24 g.	13	5 0	- - -
,, ,, 26 g.	14	5 0	- - -
Sheet Iron, Galvanised, flat, best quality:— Ordinary sizes to 20 g.	16	0 0	- - -
,, ,, 22 g. and 24 g.	16	10 0	- - -
,, ,, 26 g.	18	0 0	- - -
Galvanised Corrugated Sheets:— Ordinary sizes, 6 ft. to 8 ft. 20 g.	12	15 0	- - -
,, ,, 22 g. and 24 g.	13	5 0	- - -
,, ,, 26 g.	14	5 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12	0 0	- - -
,, ,, 22 g. and 24 g.	13	0 0	- - -
,, ,, 26 g.	14	5 0	- - -
Cut nails, 3 in. to 6 in.	9	5 0	9 15 0

(Under 3 in. usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	14 5 0	- - -
Pipe in coils	14 15 0	- - -
Soil pipe	17 5 0	- - -
Compo Pipe	17 5 0	- - -
ZINC—Sheet— Vieille Montagne ton	25 0 0	- - -
Silesian	24 15 0	- - -
COPPER— Strong Sheet per lb.	0 0 10	- - -
Thin ,,	0 0 11	- - -
Copper nails ,,	0 0 11	- - -
BRASS— Strong Sheet ,,	0 0 9	- - -
Thin ,,	0 0 10	- - -
TIN—English Ingots ,,	0 1 3½	- - -
SOLDER—Plumbers' ,,	0 0 6½	- - -
Tinmen's ,,	0 0 8½	- - -
Blowpipe ,,	0 0 9½	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths	1¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, fourths	2¾d. ,, ,,
26 oz. thirds	4d. ,, ,,
,, fourths	3¼d. ,, ,,
32 oz. thirds	5d. ,, ,,
,, fourths	4¼d. ,, ,,
Fluted sheet, 15 oz.	3d. ,, ,,
,, 21 oz.	4d. ,, ,,
½ Hartley's Rolled Plate	1¾d. ,, ,,
⅝ ,, ,, ,,	2d. ,, ,,
¾ ,, ,, ,,	2¾d. ,, ,,

PRICES CURRENT (*Continued*).

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels	per gallon	0 2 3
,, ,, ,, in drums	,,	0 2 7
Boiled ,, ,, in pipes or barrels	,,	0 2 5
,, ,, ,, in drums	,,	0 2 9
Turpentine, in barrels	,,	0 3 6
,, in drums	,,	0 3 8
Genuine Ground English White Lead	per ton	20 10 0
Red Lead, Dry	,,	20 0 0
Best Linseed Oil Putty	per cwt.	0 8 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 6
Superfine Hard-drying Oak, for Seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

J. F. S.—H. S. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

CLACTON-ON-SEA.—For the alteration and conversion of two large villas into shops, showrooms, &c., for Mr. W. Downey, in Pier-avenue, Clacton-on-Sea. Mr. George Gardiner, architect and surveyor, 5, Marine-parade, Clacton-on-Sea:—

W. S. Moore	£1,450	H. W. Gladwell	£1,224
Horace Smith	1,306	Richard Myall	1,090
Ellis & Turner	1,300		

HALIFAX.—For the erection of three houses and shop, Warley-road, for Messrs. Brear & Brown, Limited. Mr. L. Coates, architect, Waterhouse-street, Halifax:—

Excavating and Masonry.—T. Pickles, Luddenden Foot, near Halifax	£456 10 4
Carpentry and Joinery.—Ratcliffe & Sons, Claremont, Halifax	170 0 0
Plumbing and Glazing.—C. Firth, Luddenden Foot, near Halifax	34 10 0
Slating and Plastering.—Rushworth & Firth, New Bank, Halifax	56 0 0

HERTFORD.—For the erection of an hotel and shop, for Messrs. McMullen & Co., Ltd. Mr. Jas. Farley, architect, Old Cross, Hertford:—

R. A. Buckeridge	£6,888	E. West	£6,377
S. Worboys	6,629	J. Hunt	6,250
G. H. Eastwood	6,500	F. Newton	6,210
Miskin & Son	0,500	Lawrence & Son	6,184
Dupont & Co.	6,493	Ginn & Son	6,150
Wimott & Sons	6,458	W. H. Hinkins	6,149
R. L. Tonge	6,300	G. Wiggs, Watford*	6,098

HULL.—For the erection of a covered market, North Church-side, for the Corporation. Mr. J. H. Hirst, City Engineer, Town Hall, Hull:—

C. Greenwood	£11,800 0 0
Young & Peck	11,795 0 0
Amalgamated Builders, Ltd.	11,621 11 6
Bowman & Son	11,495 0 0
Jackson & Son	11,329 7 10
M. Harper	11,130 0 0
V. Knowles	11,095 0 0
G. H. Panton	10,953 0 0
J. R. Woods	10,923 5 0
J. Carr	10,839 10 2
F. Southern	10,840 1 0
T. Goates, Hull*	10,663 0 0

[*See also next page.*

LONDON.—For alterations and additions to No. 17, Upper Park-road, Hampstead, N.W., for Mr. F. J. Thairlwall. Mr. Percy A. Boulting, architect, 30, John-street, Bedford-row, W.C. :—

Clark & Co.	£385	Anley & Sons	£278
Jacob Cleverly	285		

NEWSHAM (Northumberland). — For providing and laying about 600 lineal yards of 24-in. diameter sanitary pipe sewer, building manholes, and other works, for the Blyth and Cowpen Urban District Councils. Mr. Robert Grieves, Engineer and Surveyor :—

Glen & Moffitt	£347 11 4	J. Robson	£622 18 0
G. Thornton	344 3 0	D. D. Hall	684 6 0
J. Thompson	775 4 0	G. E. Simpson, Newcastle-on-Tyne†	634 15 9
Coxon & Co.	757 15 3		
J. Hollins	739 18 8		
McLaren & Sons	739 4 6	J. McLaren	625 5 0
S. Miller	727 19 6	J. Spark	515 6 6
McLaren & Co.	711 13 3		

NOTTINGHAM.—For alterations to the Foresters' Arms, situate in St. Ann's-street. Mr. Fred C. Martin, architect, Angel-row, Nottingham :—

W. M. Maule	£235	F. Messom*	£220

WALTHAMSTOW.—For the erection of a new school, with central hall, at Selwyn-avenue, Hale End, for the Walthamstow School Board. Mr. H. Prosser, Architect to the Board. Quantities by Mr. G. T. G. Wright, 3, Great Winchester-street, E.C. :—

A. G. Barton	£8,062	H. J. Carter	£7,456
A. Porter	7,936	J. & J. Dean	7,435
Foster Bros.	7,810	Sands, Palmer, & Co.	7,250
Pollard & Brand	7,800	Kerridge & Shaw	7,175
Appleby & Sons	7,666	Knight & Son	7,173
Battley, Sons, & Holness	7,494	F. J. Coxhead	6,867
		Sims & Woods	5,890

WALTHAMSTOW. — For carrying out alterations with nine new classrooms, and adapting old rooms for central halls, at the Maynard-road schools, for the Walthamstow School Board. Mr. H. Prosser, Architect to the Board. Quantities by Mr. G. T. G. Wright, 3, Great Winchester-street, E.C. :—

A. G. Barton	£8,291	Foster Bros.	£6,725
Sims & Woods	7,960	H. J. Carter	6,715
A. Porter	7,146	Battley, Sons, & Holness	6,287
Knight & Son	6,973	J. & J. Dean	6,219
J. S. Scott	6,935	Kerridge & Shaw	6,150
Sands, Palmer, & Co.	6,916	Pollard & Brand	6,040
Appleby & Sons	6,855	F. J. Coxhead	5,989
A. G. Crisp	6,750		

WALTHAMSTOW.—For stables, loft, &c., for Messrs. Silk & Co., Essex-grove, Walthamstow. Mr. Geo. B. Jerram, architect. No quantities :—

G. Barker	£384 10	Iles & Son	£338 0
A. Fairhead	367 11	Castle & Sons, Lower Clapton*	335 0
J. Stewart	357 3		

WATERFORD.—For the erection of a free library, for the Committee. Mr. A. E. Murray, architect, 37, Dawson-street, Dublin :—

J. P. Pile	£4,800 0 0	J. Hearne	£3,802 2 1
Hamilton & Titterington	4,400 0 0	G. Nolan	3,746 6 4
J. Hemingway	4,178 0 0	P. Costen, Waterford†	3,710 0 0
McKee and McNally	3,853 3 9		

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STONE MERCHANTS & CONTRACTORS.
Chief Office.—*Warwick Road, KENSINGTON.*
Norway, Guernsey, and Leicestershire Granite, Kerb, Pitching, and Yorkshire Stone.
ESTIMATES GIVEN FOR EVERY DESCRIPTION OF ROAD MAKING.

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PUBLISHER'S NOTICES.

THE INDEX (with TITLE-PAGE) for VOLUME LXXXIII. (July to December, 1902) was given as a supplement with the number for January 10th.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

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